Pentair Water

Fleck 3900

Service Manual

TABLE OF CONTENTS

TABLE OF CONTENTS....1
JOB SPECIFICATION SHEET....1
INSTALLATION....2
START-UP INSTRUCTIONS....2
3200 TIMER SETTING PROCEDURE....3
3210 & 3220 TIMER SETTING PROCEDURE....4
3200, 3210, 3220, 3230 REGENERATION CYCLE SETTING PROCEDURE....5
3200 TIME CLOCK TIMER ASSEMBLY....6
3210 METER DELAYED TIMER ASSEMBLY....7
3220 METER IMMEDIATE TIMER ASSEMBLY....8
3230 REMOTE START TIMER ASSEMBLY....9
CONTROL DRIVE ASSEMBLY....10
ADAPTER CONTROL DRIVE LOWER POWERHEAD....12
CONTROL VALVE....13
1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY....15
3" METER ASSEMBLY....18
SERVICE VALVE OPERATOR ASSEMBLY....19
2350 SAFETY BRINE VALVE....20
TROUBLESHOOTING....21
GENERAL SERVICE HINTS FOR METER CONTROL....22
WATER CONDITIONER FLOW DIAGRAMS....22
FLOW DATA & INJECTOR DRAW RATES....24
DIMENSIONAL DRAWING 3900 TOP MOUNT....25
DIMENSIONAL DRAWING 3900 SIDE MOUNT....26
TYPICAL INSTALLATIONS....27
VALVE WIRING....28
SERVICE ASSEMBLIES....33

JOB SPECIFICATION SHEET

Job Number: _____

Model Number: _____

Water Hardness: _____ ppm or gpg

Capacity Per Unit: _____

Mineral Tank Size: _____ Diameter: _____ Height: _____

Salt Setting per Regeneration: _____

1. **Type of Timer:**
   - A. 7 Day or 12 Day
   - B. Meter Initiated
2. **Downflow:** **Upflow** **Upflow Variable**
3. **Meter Size:**
   - A. 3/4" Std Range (125 - 2,100 gallon setting)
   - B. 3/4" Ext Range (625 - 10,625 gallon setting)
   - C. 1" Std Range (310 - 5,270 gallon setting)
   - D. 1" Ext Range (1,150 - 26,350 gallon setting)
   - E. 1-1/2" Std Range (625 - 10,625 gallon setting)
   - F. 1-1/2" Ext Range (3,125 - 53,125 gallon setting)
   - G. 2" Std Range (1,250 - 21,250 gallon setting)
   - H. 2" Ext Range (6,250 - 106,250 gallon setting)
   - I. 3" Std Range (3,750 - 63,750 gallon setting)
   - J. 3" Ext Range (18,750 - 318,750 gallon setting)
   - K. Electronic_____ Pulse Count _____ Meter Size _____
4. **System Type:**
   - A. System #4: 1 Tank, 1 Meter, Immediate, or Delayed Regeneration
   - B. System #4: Time Clock
   - C. System #4: Twin Tank
   - D. System #5: 2-5 Tanks, Interlock Mechanical
     2-4 Tanks, Interlock Electronic
     Meter per unit for Mechanical and Electronic
   - E. System #6: 2-5 Tanks, 1 Meter, Series Regeneration, Mechanical
     2-4 Tanks, 1 Meter, Series Regeneration, Electronic
   - F. System #7: 2-5 Tanks, 1 Meter, Alternating Regeneration, Mechanical
     2 Tanks only, 1 Meter, Alternating Regeneration, Electronic
   - G. System #9: Electronic Only, 2-4 Tanks, Meter per Valve, Alternating
   - H. System #14: Electronic Only, 2-4 Tanks, Meter per Valve. Brings units on and offline based on flow.
5. **Timer Program Settings:**
   - A. Backwash: _____ Minutes
   - B. Brine and Slow Rinse: _____ Minutes
   - C. Rapid Rinse: _____ Minutes
   - D. Brine Tank Refill: _____ Minutes
   - E. Pause Time:_____ Minutes
   - F. Second Backwash: _____ Minutes
6. **Drain Line Flow Control: _____gpm**
7. **Brine Line Flow Controller: _____gpm**
8. **Injector Size#: _____**
9. **Piston Type:**
   - A. Hard Water Bypass
   - B. No Hard Water Bypass

INSTALLATION

Water Pressure

A minimum of 20 pounds (1.4 bar) of water pressure is required for regeneration valve to operate effectively.

Electrical Facilities

An uninterrupted alternating current (A/C) supply is required. Note: Other voltages are available. Please make sure your voltage supply is compatible with your unit before installation.

Existing Plumbing

Condition of existing plumbing should be free from lime and iron buildup. Piping that is built up heavily with lime and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

Location Of Softener And Drain

The softener should be located close to a drain to prevent air breaks and back flow.

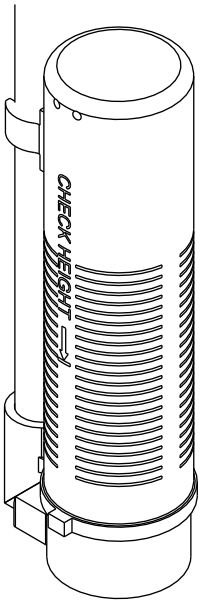
BY-PASS VALVES

Always provide for the installation of a by-pass valve if unit is not equipped with one.

CAUTION **Water pressure is not to exceed 125 psi (8.6 bar), water temperature is not to exceed 110°F (43°C), and the unit cannot be subjected to freezing conditions.**

Installation Instructions

1. Place the softener tank where you want to install the unit making sure the unit is level and on a firm base.
2. During cold weather, the installer should warm the valve to room temperature before operating.
3. All plumbing should be done in accordance with local plumbing codes. The pipe size for residential drain line should be a minimum of 1/2" (13 mm). Backwash flow rates in excess of 7 gpm (26.5 Lpm) or length in excess of 20' (6 m) require 3/4" (19 mm) drain line. Commercial drain lines should be the same size as the drain line flow control.
4. Refer to the dimensional drawing for cutting height of the distributor tube. If there is no dimensional drawing, cut the distributor tube flush with the top of the tank.
5. Lubricate the distributor O-ring seal and tank O-ring seal. Place the main control valve on tank. Note: Only use silicone lubricant.
6. Solder joints near the drain must be done prior to connecting the Drain Line Flow Control fitting (DLFC). Leave at least 6" (15 cm) between the DLFC and solder joints when soldering pipes that are connected on the DLFC. Failure to do this could cause interior damage to the DLFC.
7. Teflon tape is the only sealant to be used on the drain fitting. The drain from twin tank units may be run through a common line.
8. Make sure that the floor is clean beneath the salt storage tank and that it is level.
9. Place approximately 1" (25 mm) of water above the grid plate. If a grid is not utilized, fill to the top of the air check (Figure 1) in the salt tank. Do not add salt to the brine tank at this time.
10. On units with a by-pass, place in by-pass position. Turn on the main water supply. Open a cold soft water tap nearby and let run a few minutes or until the system is free from foreign material (usually solder) that may have resulted from the installation. Once clean, close the water tap.
11. Slowly place the by-pass in service position and let water flow into the mineral tank. When water flow stops, slowly open a cold water tap nearby and let run until the air is purged from the unit.
12. Plug unit into an electrical outlet. Note: All electrical connections must be connected according to local codes. Be certain the outlet is uninterrupted.



60002 Rev E

Figure 1 Residential Air Check Valve

START-UP INSTRUCTIONS

The water softener should be installed with the inlet, outlet, and drain connections made in accordance with the manufacturer's recommendations, and to meet applicable plumbing codes.

1. Turn the manual regeneraton knob slowly in a clockwise direction until the program micro switch lifts on top of the first set of pins. Allow the drive motor to move the piston to the first regeneration step and stop. Each time the program switch position changes, the valve will advance to the next regeneration step. Always allow the motor to stop before moving to the next set of pins or spaces.

   NOTE: For electronic valves, please refer to the manual regeneration part of the timer operation section. If the valve came with a separate electronic timer service manual, refer to the timer operation section of the electronic timer service manual.
2. Position the valve to backwash. Ensure the drain line flow remains steady for 10 minutes or until the water runs clear (see above).
3. Position the valve to the brine / slow rinse position. Ensure the unit is drawing water from the brine tank (this step may need to be repeated).
4. Position the valve to the rapid rinse position. Check the drain line flow, and run for 5 minutes or until the water runs clear.
5. Position the valve to the start of the brine tank fill cycle. Ensure water goes into the brine tank at the desired rate. The brine valve drive cam will hold the valve in this position to fill the brine tank for the first regeneration.
6. Replace control box cover.
7. Put salt in the brine tank.

   NOTE: Do not use granulated or rock salt.

3200 TIMER SETTING PROCEDURE

How To Set Days On Which Water Conditioner Is To Regenerate (Figure 2)

Rotate the skipper wheel until the number “1” is at the red pointer. Set the days that regeneration is to occur by sliding tabs on the skipper wheel outward to expose trip fingers. Each tab is one day. Finger at red pointer is tonight. Moving clockwise from the red pointer, extend or retract fingers to obtain the desired regeneration schedule.

How To Set The Time Of Day

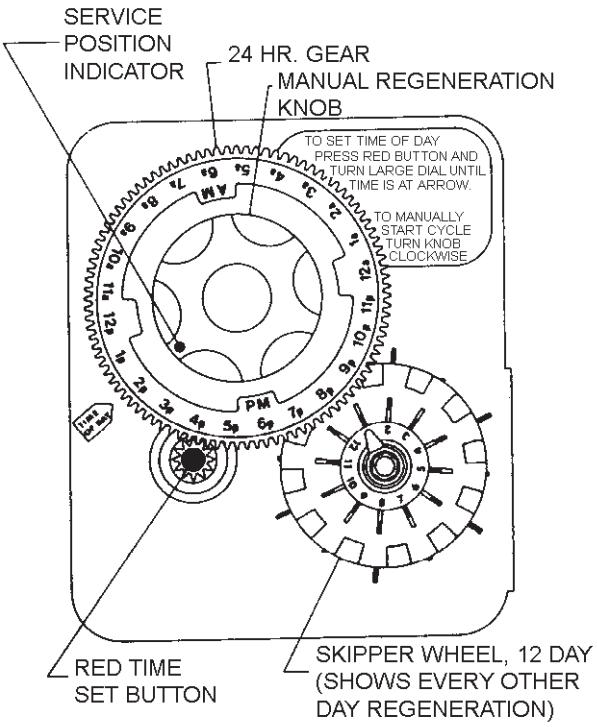
1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is at the time of day pointer.
3. Release the red button to again engage the drive gear.

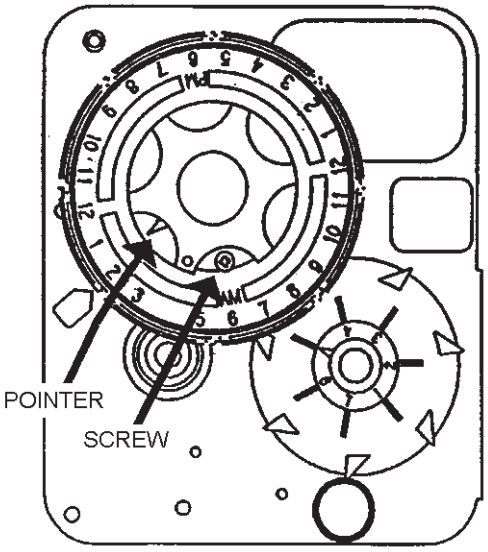
How To Manually Regenerate Your Water Conditioner At Any Time

1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
4. Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
5. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

How to Adjust Regeneration Time

1. Disconnect the power source.
2. Locate the three screws behind the manual regeneration knob by pushing the red button in and rotating the 24 hour dial until each screw appears in the cut out portion of the manual regeneration knob.
3. Loosen each screw slightly to release the pressure on the time plate from the 24 hour gear.
4. Locate the regeneration time pointer on the inside of the 24 hour dial in the cut out.
5. Turn the time plate so the desired regeneration time aligns next to the raised arrow.
6. Push the red button in and rotate the 24 hour dial. Tighten each of the three screws.
7. Push the red button and locate the pointer one more time to ensure the desired regeneration time is correct.
8. Reset the time of day and restore power to the unit.


SERVICE POSITION INDICATOR
24 HR. GEAR
MANUAL REGENERATION KNOB
TO SET TIME OF DAY PRESS RED BUTTON AND TURN LARGE DIAL UNTIL TIME IS AT ARROW.
TO MANUALLY START CYCLE TURN KNOB CLOCKWISE
RED TIME SET BUTTON
SKIPPER WHEEL, 12 DAY (SHOWS EVERY OTHER DAY REGENERATION)



3200 ADJUSTABLE REGENERATION TIMER

IMPORTANT!
SALT LEVEL MUST ALWAYS BE ABOVE WATER LEVEL IN BRINE TANK

61502-3200 Rev A

Figure 2

3210 & 3220 TIMER SETTING PROCEDURE

Typical Programming Procedure

Calculate the gallon capacity of the system, subtract the necessary reserve requirement and set the gallons available opposite the small white dot on the program wheel gear (Figure 3).

NOTE: Drawing shows 8,750 gallon setting. The capacity (gallons) arrow (15) shows zero gallons remaining. The unit will regenerate tonight at the set regeneration time.

How To Set The Time Of Day

1. Press and hold the red button in to disengage the drive gear.
2. Turn the large gear until the actual time of day is opposite the time of day pointer.
3. Release the red button to again engage the drive gear.

How To Manually Regenerate Your Water Conditioner At Any Time

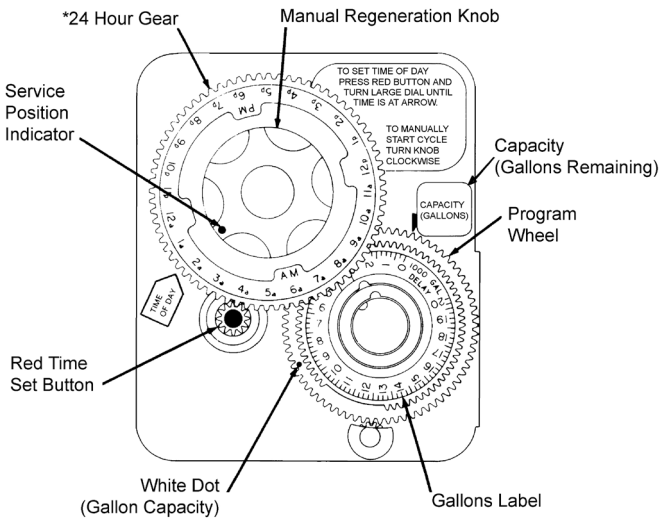
1. Turn the manual regeneration knob clockwise.
2. This slight movement of the manual regeneration knob engages the program wheel and starts the regeneration program.
3. The black center knob will make one revolution in the following approximately three hours and stop in the position shown in the drawing.
4. Even though it takes three hours for this center knob to complete one revolution, the regeneration cycle of your unit might be set for only one half of this time.
5. In any event, conditioned water may be drawn after rinse water stops flowing from the water conditioner drain line.

Immediate Regeneration Timers

These timers do not have a 24 hour gear. Setting the gallons on the program wheel and manual regeneration procedure are the same as previous instructions. The timer will regenerate as soon as the capacity gallons reaches zero.

NOTE: The program wheel to the left may be different than the program wheel on the product.

NOTE:To set meter capacity rotate manual knob one - 360° revolution to set gallonage.



*Immediate regeneration timers do not have a 24-hour gear. No time of day can be set.

61502-3200 Rev A

Figure 3

3200, 3210, 3220, 3230 REGENERATION CYCLE SETTING PROCEDURE

How To Set The Regeneration Cycle Program

The regeneration cycle program on your water conditioner has been factory preset, however, portions of the cycle or program may be lengthened or shortened in time to suit local conditions.

3200 Series Timers (Figure 4)

1. To expose cycle program wheel, grasp timer in upper left-hand corner and pull, releasing snap retainer and swinging timer to the right.
2. To change the regeneration cycle program, the program wheel must be removed. Grasp program wheel and squeeze protruding lugs toward center, lift program wheel off timer. Switch arms may require movement to facilitate removal.
3. Return timer to closed position engaging snap retainer in back plate. Make certain all electrical wires locate above snap retainer post.

Timer Setting Procedure

How To Change The Length Of The Backwash Time

The program wheel as shown in the drawing is in the service position. As you look at the numbered side of the program wheel, the group of pins starting at zero determines the length of time your unit will backwash.

For example, if there are six pins in this section, the time of backwash will be 12 min. (2 min. per pin). To change the length of backwash time, add or remove pins as required. The number of pins times two equals the backwash time in minutes.

How To Change The Length Of Brine And Rinse Time

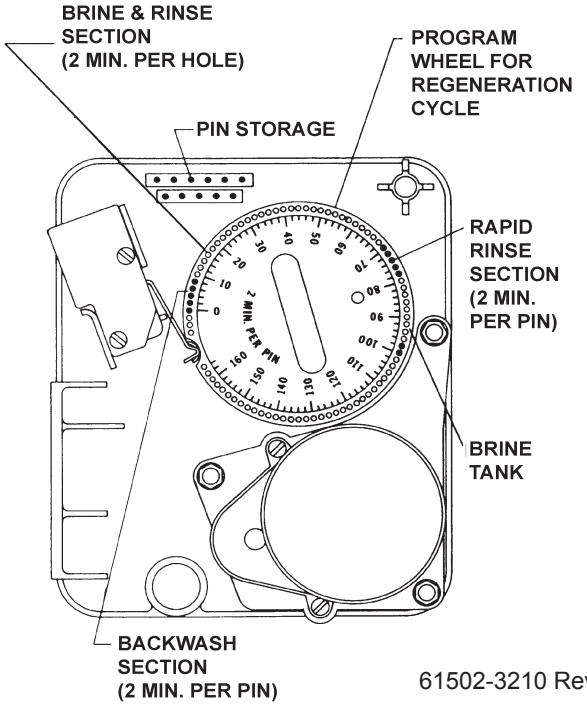
1. The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that your unit will brine and rinse (2 min. per hole).
2. To change the length of brine and rinse time, move the rapid rinse group of pins to give more or fewer holes in the brine and rinse section. Number of holes times two equals brine and rinse time in minutes.

How To Change The Length Of Rapid Rinse

1. The second group of pins on the program wheel determines the length of time that your water conditioner will rapid rinse (2 min. per pin).
2. To change the length of rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins times two equals the rapid rinse time in minutes.

How To Change The Length Of Brine Tank Refill Time

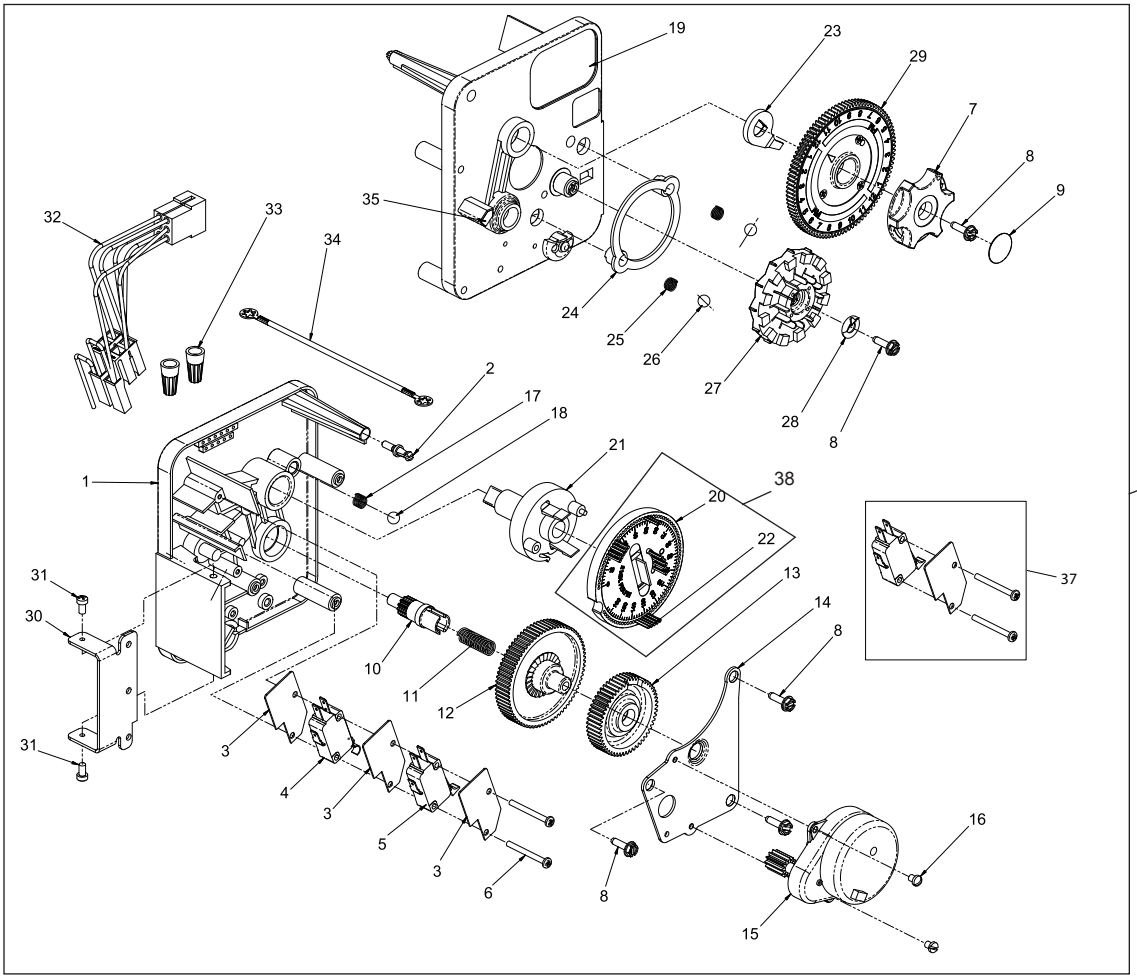
1. The second group of holes in the program wheel determines the length of time that your water conditioner will refill the brine tank (2 min. per hole).
2. To change the length of refill time, move the two pins at the end of the second group of holes as required.
3. The regeneration cycle is complete when the outer microswitch is tripped by the two pin set at end of the brine tank refill section.
4. The program wheel, however, will continue to rotate until the inner micro switch drops into the notch on the program wheel.


BRINE & RINSE SECTION (2 MIN. PER HOLE)
PROGRAM WHEEL FOR REGENERATION CYCLE
PIN STORAGE
RAPID RINSE SECTION (2 MIN. PER PIN)
BRINE TANK
BACKWASH SECTION (2 MIN. PER PIN)
2 MIN. PER PIN

61502-3210 Rev A

Figure 4

3200 TIME CLOCK TIMER ASSEMBLY



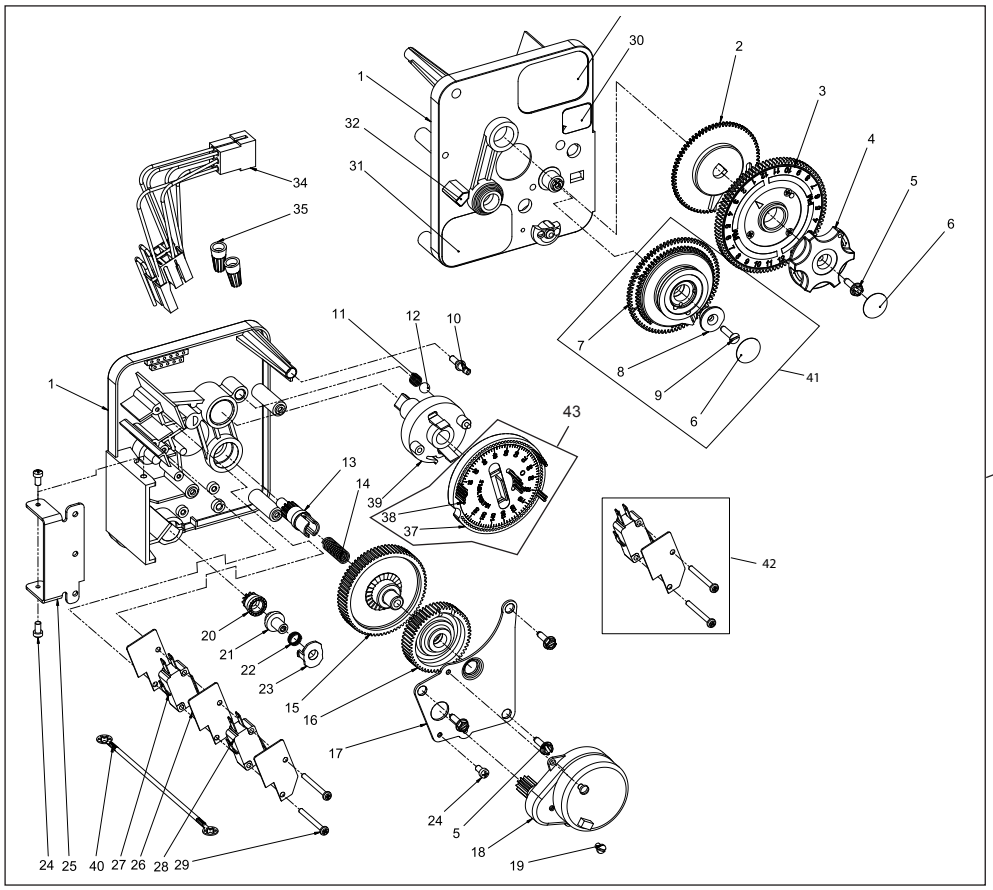
61502-3200 Rev A

Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200
2	1	14265	Clip, Sping
3	3	14087	Insulator
4	1	10896	Switch, Micro
5	1	15320	Switch, Micro, Timer
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
7	1	13886	Knob, 3200
8	5	13296	Screw, Hex Wsh, 6-20 x 1/2
9	1	11999	Label, Button
10	1	13018	Pinion, Idler
11	1	13312	Spring, Idler Shaft
12	1	13017	Gear, Idler
13	1	13164	Gear, Drive
14	1	13887	Plate, Motor Mounting
15	1	18743-1	Motor, 120V, 60Hz, 1/30 RPM
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1	Motor, 230V, 50Hz, 1/30 RPM
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
16	2	13278	Screw, Sltd Fillister Hd 6-32 x .156
17	1	15424	Spring, Detent, Timer
18	1	15066	Ball, 1/4”, Delrin
19	1	15465	Label, Caution

Item No.	QTY	Part No.	Description
20	1	19210	Program Wheel Assy
21	1	13911	Gear, Main Drive, Timer
22	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
23	1	13011	Arm, Cycle Actuator
24	1	13864	Ring, Skipper Wheel
25	2	13311	Spring, Detent, Timer
26	2	13300	Ball, 1/4”, SS
27	1	14381	Skipper Wheel Assy, 12 Day
	1	14860	Skipper Wheel Assy, 7 Day
28	1	13014	Pointer, Regeneration
29	1	40096-24	Dial, 12 AM Regen Assy, Black
	1	40096-02	Dial, 2 AM Regen Assy, Black
30	1	13881	Bracket, Hinger Timer
31	2	11384	Screw, Phil, 6-32 x 1/4 Zinc
32	1	13902	Harness, 3200
33	2	40422	Nut, Wire, Tan
34	1	15354-01	Wire, Ground, 4”
35	1	14007	Label, Time of Day
36	1	*	Complete 3200 Time Clock Timer Assembly
37		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
38		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
		61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin

*Call your distributor for Part Number

3210 METER DELAYED TIMER ASSEMBLY



61502-3210 Rev A

Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer, 3200
2	1	13802	Gear, Cycle Actuator
3	1	40096-02	Dial 2 AM Regen Assy, Black
4	1	13886	Knob, 3200
5	4	13296	Screw, Hex Wsh, 6-20 x 1/2
6	2	11999	Label, Button
7	1	13803	Gear, Program Drive Wheel
8	1	13806	Retainer, Program Wheel
9	1	13748	Screw, Flat Head St, 6-20 x 1/2
10	1	14265	Clip, Spring
11	1	15424	Spring, Detent, Timer
12	1	15066	Ball, 1/4” Delrin
13	1	13018	Pinion, Idler
14	1	13312	Spring, Idler Shaft
15	1	13017	Gear, Idler
16	1	13164	Gear, Drive
17	1	13887	Plate, Motor Mounting
18	1	18743-1	Motor, 120V, 60Hz 1/30 RPM
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1	Motor, 230V, 50Hz, 1/30 RPM
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
19	1	13278	Screw, Fillister Hd, 6-32 x .156
20	1	13830	Pinion, Program Wheel Drive
21	1	13831	Clutch, Drive Pinion
22	1	14276	Spring, Meter, Clutch
23	1	14253	Retainer, Clutch Spring
24	3	11384	Screw, Phil, 6-32 x 1/4
25	1	13881	Bracket, Hinge Timer

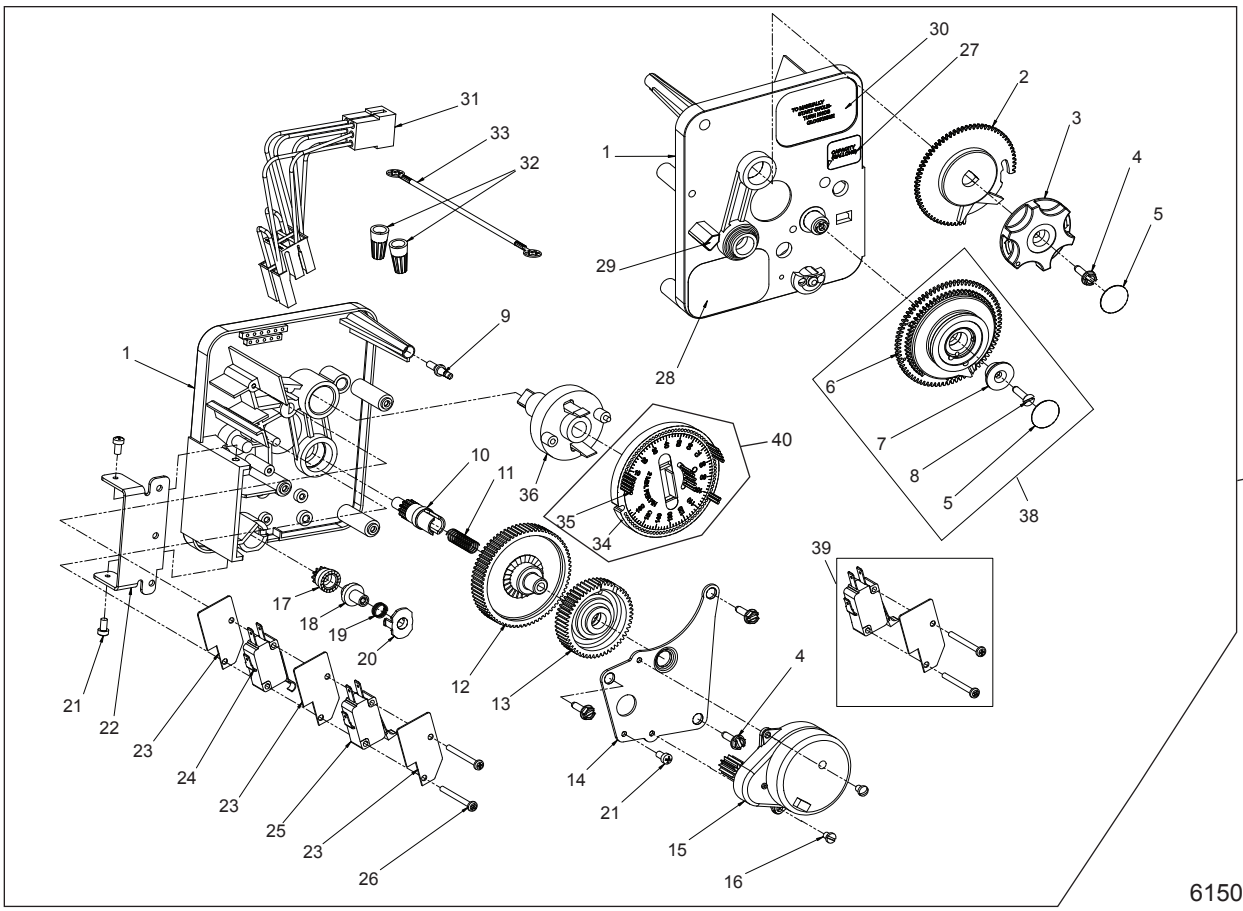
Item No.	QTY	Part No.	Description
26	3	14087	Insulator
27	1	10896	Switch, Micro
28	1	15320	Switch, Micro, Timer
29	2	11413	Screw, Pan Hd Mach, 4-40 x 1 1/8
30	1	14198	Label, Indicator
31	1	15465	Label, Caution
32	1	14007	Label, Time of Day
33	1	14045	Label, Instruction
34	1	13902	Harness, 3200
35	2	40422	Nut, Wire, Tan
36	1	15354-01	Wire, Ground, 4”
37	1	19210	Program Wheel Assy
38	17	41754	Pin, Spring, 1/16 x 5/8 SS, Timer
39	1	13911	Gear, Main Drive, Timer
40	1	*	Complete 3210 Meter Delayed Timer Assembly
41		60405-80	Program Wheel, w/3" STD Label 63,750 gal
		60405-90	Program Wheel, w/3" EXT Label 320,000 gal
42		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
43		61420-03	Program Wheel, Gear Assy, Filter 2 Min Per Pin
		61420-04	Program Wheel, Gear Assy, Softener, 2 Min Per Pin

Not Shown:

	25141	Label, STD M3, Gallon 240, 3"
	25142	Label, EXT M3, Gallon 1200, 3"

*Call your distributor for Part Number

3220 METER IMMEDIATE TIMER ASSEMBLY



61502-3220 Rev B

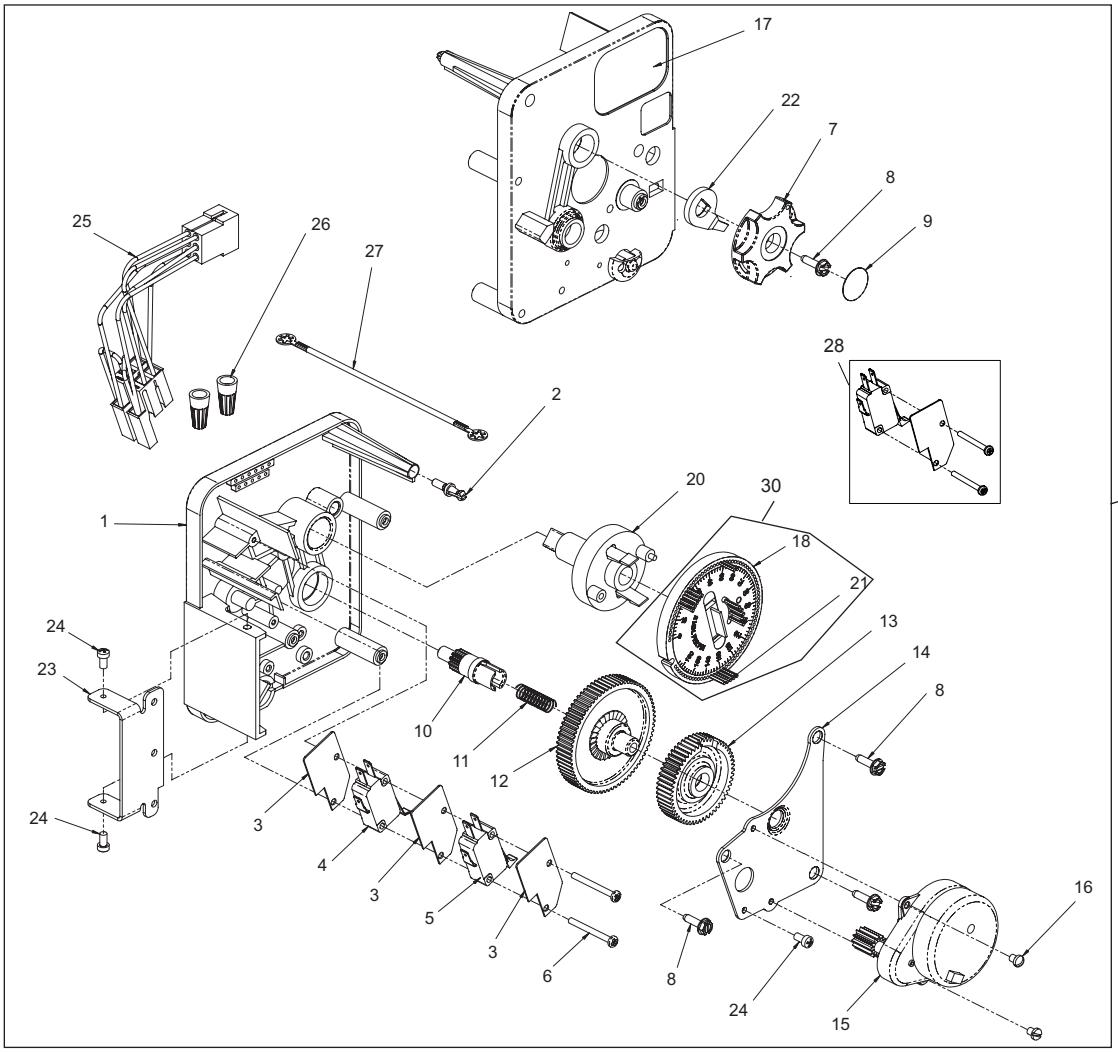
Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer
2	1	15431	Gear, Cycle Actuator, System #5
3	1	13886	Knob, 3200
4	4	13296	Screw, Hex Wsh, 6-20 x 1/2
5	2	11999	Label, Button
6	1	13807	Gear, Program Drive Wheel
7	1	13806	Retainer, Program Wheel
8	1	13748	Screw, Flt Hd St, 6-20 x 1/2
9	1	14265	Spring Clip
10	1	13018	Pinion, Idler
11	1	18563	Idler Shaft Spring
12	1	13017	Gear, Idler
13	1	13164	Drive Gear
14	1	13887	Plate, Motor Mounting
15	1	18743-1	Motor, 120V, 60 Hz, 1/30 RPM
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1	Motor, 230V, 50Hz, 1/30 RPM
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM
16	2	13278	Screw, Sltd Fillister Hd
17	1	14502	Pinion, Program Wheel
18	1	14501	Clutch, Drive Pinion
19	1	14276	Meter Clutch Spring
20	1	14253	Retainer, Clutch Spring
21	3	11384	Screw, Phil, 6-32 x 1/4 Zinc
22	1	13881	Bracket, Hinge Timer
23	3	14087	Insulator
24	1	15414-00	Micro Switch
25	1	15320	Switch, Micro, Timer
26	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
27	1	14198	Label, Indicator
28	1	15465	Label, Caution
29	1	14007	Label, Time of Day
30	1	15148	Label, Instruction
31	1	40617	Harness, 3220
32	2	40422	Nut, Wire, Tan
33	1	15354-01	Wire, Ground, 4"
34	1	19210-05	Program Wheel Assembly, 9000/3230
35	17	41754	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
36	1	15055	Gear, Main Drive
37	1	*	Complete 3220 Meter Immediate Timer Assembly
38		60405-80	Program Wheel, w/3" STD Label 63,750 gal
		60405-90	Program Wheel, w/3" EXT Label 320,000 gal
39		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
40		61420-06	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
		61420-42	Program Wheel, Gear Assy, Filter Immediate 2 Min Per Pin

Not Shown:

	25141	Label, STD M3, Gallon 240, 3"
	25142	Label, EXT M3, Gallon 1200, 3"

*Call your distributor for Part Number

3230 REMOTE START TIMER ASSEMBLY



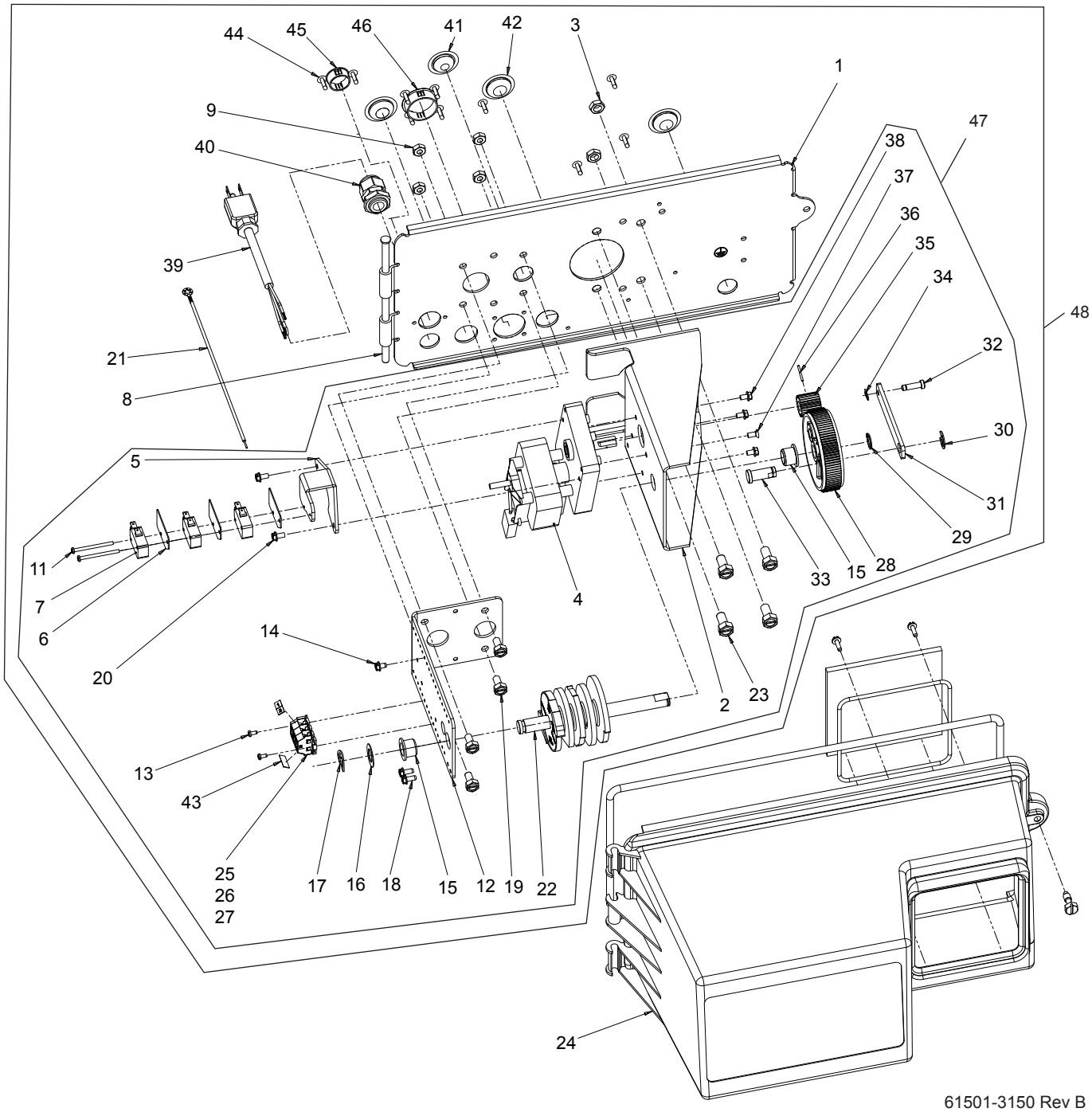
61502-3230R REV A

Item No.	QTY	Part No.	Description
1	1	13870	Housing, Timer
2	1	14265	Spring Clip
3	3	14087	Insulator
4	1	15314	Micro Switch
5	1	15320	Switch, Micro, Timer
6	2	11413	Screw, Pan Hd Mach, 4-40 x 1-1/8
7	1	13886	Knob, 3200
8	4	13296	Screw, Hex Wsh, 6-20 x 1/2
9	1	11999	Label, Button
10	1	13018	Pinion, Idler
11	1	18563	Idler Shaft Spring
12	1	13017	Gear, Idler
13	1	15055	Drive Gear
14	1	13887	Plate, Motor Mounting
15	1	18743-1	Motor, 120V, 60 Hz, 1/30 RPM
	1	18752-1	Motor, 100V, 50Hz, 1/30 RPM
	1	18824-1	Motor, 23V, 50Hz, 1/30 RPM
	1	18826-1	Motor, 24V, 50Hz, 1/30 RPM
	1	19659-1	Motor, 24V, 60Hz, 1/30 RPM
	1	19660-1	Motor, 230V, 60Hz, 1/30 RPM

Item No.	QTY	Part No.	Description
16	2	13278	Screw, Sltd Fillister Hd
17	1	15313	Label, Caution
18	1	19210-05	Program Wheel Assembly, 3200
20	1	15055	Main Drive Gear
21	17	41754	Pin, Spring, 1/16 x 5/8 Stainless Steel, Timer
22	1	13011	Cycle Actuator Arm
23	1	13881	Bracket, Hinge Timer
24	3	11384	Screw, Phil, 6-32 x 1/4 Zinc
25	1	16336	Harness, 3230R
26	2	40422	Nut, Wire, Tan
27	1	15354-01	Wire, Ground, 4”
28		60320-02	Switch Kit, 3200/9000 Timer Auxiliary, Optional
29		*	3230 Timer Assy
30		61420-06	Program Wheel, Gear Assy, Softener Immediate 2 Min Per Pin
		61420-42	Program Wheel, Gear Assy, Filter Immediate 2 Min Per Pin

*Call your distributor for Part Number

CONTROL DRIVE ASSEMBLY



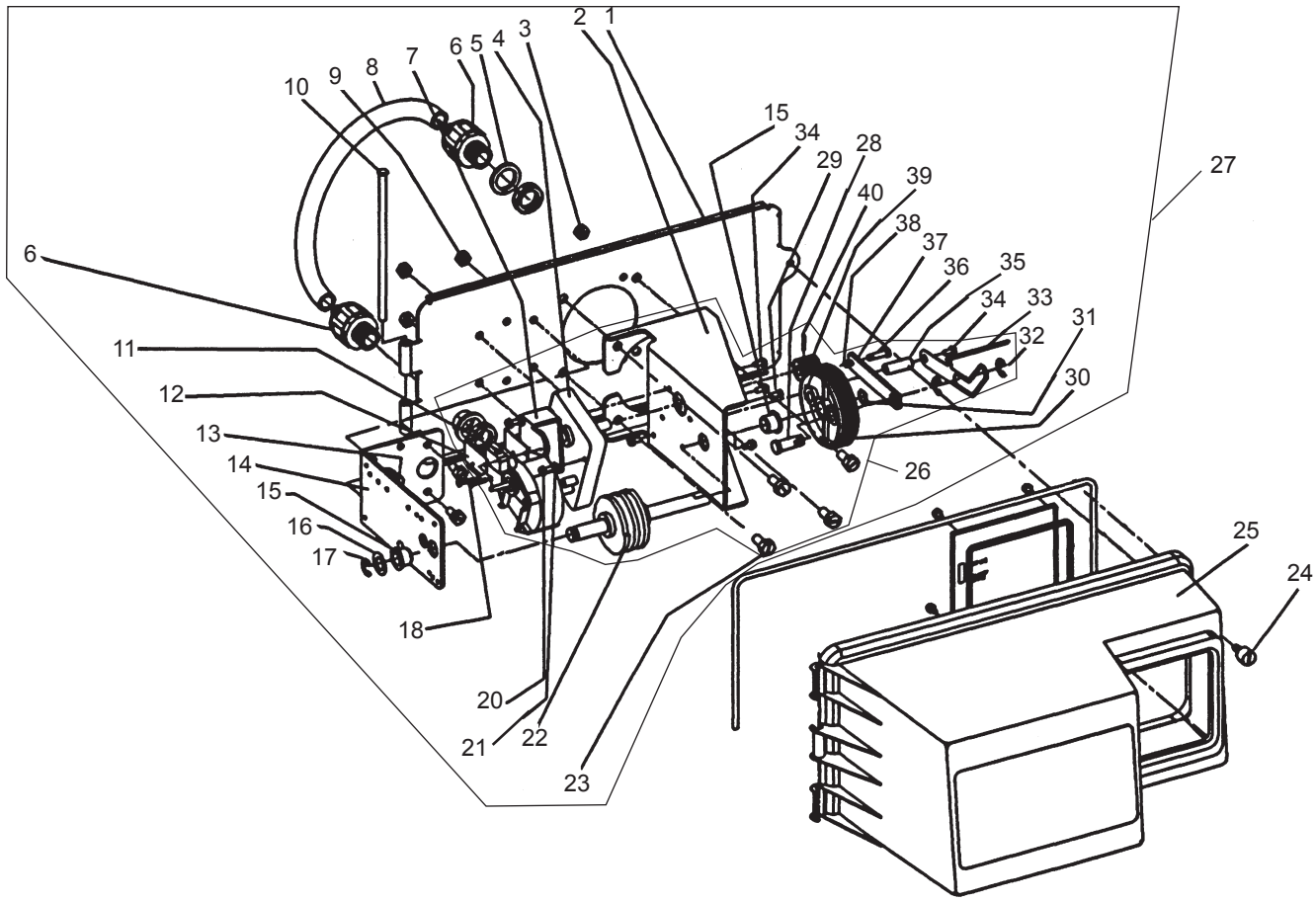
61501-3150 Rev B

CONTROL DRIVE ASSEMBLY *continued*

Item No.	QTY	Part No.	Description
1	1	19304-04	Backplate, 3150/3900, Upper, NEMA 3R
2	1	15120-01	Bracket, Motor Mtg, 3150/3900 Environmental
3	2	16346	Nut, Hex, Jam, 5/16 - 18
4	1	40392	Motor, Drive, 115V, 50/60 Hz, Sp
		40390	Motor, Drive, 220V, 50 Hz, Sp, Fam 3
		42581	Motor, Drive, 24VAC/DC, 50-60 Hz, Fam 3
5	1	17797	Bracket, Switch Mounting, 3150/3900
6	4	10302	Insulator, Limit Switch
7	3	10218	Switch, Micro
8	1	17845-03	Pin, Hinge, 3150/3900, Env
9	4	11235	Nut, Hex, 1/4 -20, Mach Screw, Zinc
10	2	13365	Washer, Lock, #4, External
11	2	40080	Screw, Rd Hd, 4-40 x 1 1/2"
12	1	16053	Bracket, Brine Side
13	2	40133	Screw, Pan Hd, 4-40 x 1/4
14	2	40133	Screw Pan HD, 4-40 x 1/4"
15	2	16052	Bushing, 3150/3900
16	1	16059	Washer, SS, .88, 3150/3900
17	1	16051	Ring, Retaining, Bowed
18	2	10300	Screw, Slot Hex Wsh, 18-8 x 3/8
19	4	10231	Screw, Slot Hex, 1/4 - 20 x 1/2
20	2	14202-01	Screw, Hex Wsh Hd, 8 x 5/16
21	1	10475-01	Wire, Ground
22	1	16494-03	Cam Assy, 3150/3900 Signal After Brine Fill
		16494-05	Cam Assy, 3150/3900 Upper Signal After Rapid Rinse
		16494-06	Cam Assy, 3150/3900, Upper, Upflow, Signal After Rapid Rinse
23	4	11224	Screw, Hex Hd, 5/16 - 18 x 5/8
24	1	60240-02	Cover Assy, 3150/3900 Env, Black, NEMA 3R
25	5	41084	Terminal Block, Segment, Gray
26	1	41085	Endplate, Terminal Bloack, Gray
27	1	40174	Terminal Block, Green/Yellow
28	1	16046	Gear, Drive
29	1	16050	Ring, Retaining
30	1	11774	Ring, Retaining
31	1	16047	Link, Drive
32	1	11709	Pin, Drive Link
33	1	16048	Bearing, Drive Link
34	1	11898	Clip, 3150/3900
35	1	16045	Pinion, Drive
36	1	11381	Pin, Roll, 2900/3900
37	1	11080	Screw, Flt Hd Mach, 8-32 x 3/8
38	3	10872	Screw, Hex Wsh, 8-32 x 17/64
39	1	40084-12	Power Cord, 12' US, Round, 120V
		40085-12	Power Cord, 12' US, Round, 240V
		11545	Power Cord, 4' European, Black
		19303	Power Cord, 8', Australian
		19885	Power Cord, Japanese, 110V/120V
40	1	17967	Fitting Assy, Liquid Tight, Blk
41	1	19691	Plug, .750 Dia, Recessed, Black
42	3	19591	Plug, .8750 Hole, Recessed, Black
43	2	15250	Label, Terminal Strip
44	10	19800	Plug, .140 Dia, White
45	1	15806	Plug, Hole, Heyco #2693
46	1	17421	Plug, 1.20 Hole
47		60057-01	Drive Assy, 3150, 120V, SYS 5 & 7, Signal After Brine Tank Fill
		60057-03	Drive Assy, 3150, 24V, 3900 Upper, SYS #5 or SYS #7
		60057-11	Drive Assy, 3150, 120V, 3900 Upper, SYS #4 or SYS #6
		60057-21	Drive Assy, 3150, 120V, Upflow, 3900 Upper, SYS 5 or SYS 7, Brine Draw First
48	*		3150 Powerhead Assembly
Not Shown			
	1	17470	Cable Guide Assy, 2850/3150
	1	19856	Ring, Retaining (Used on Cover)
	1		Timer (See Timer Section)
	1	16427-04	Wire, Lead, 12", White
	1	40396	Harness, Drive, Environmental
	1	14924	Strain Relief Heyco #1247
	1	15513	Meter Cable, 17.5", 2"
	1	15216	MeterCable, 15.25", 1.5"
	1	18585	Harness, 3900, Aux Switch

*Call your distributor for Part Number

ADAPTER CONTROL DRIVE LOWER POWERHEAD

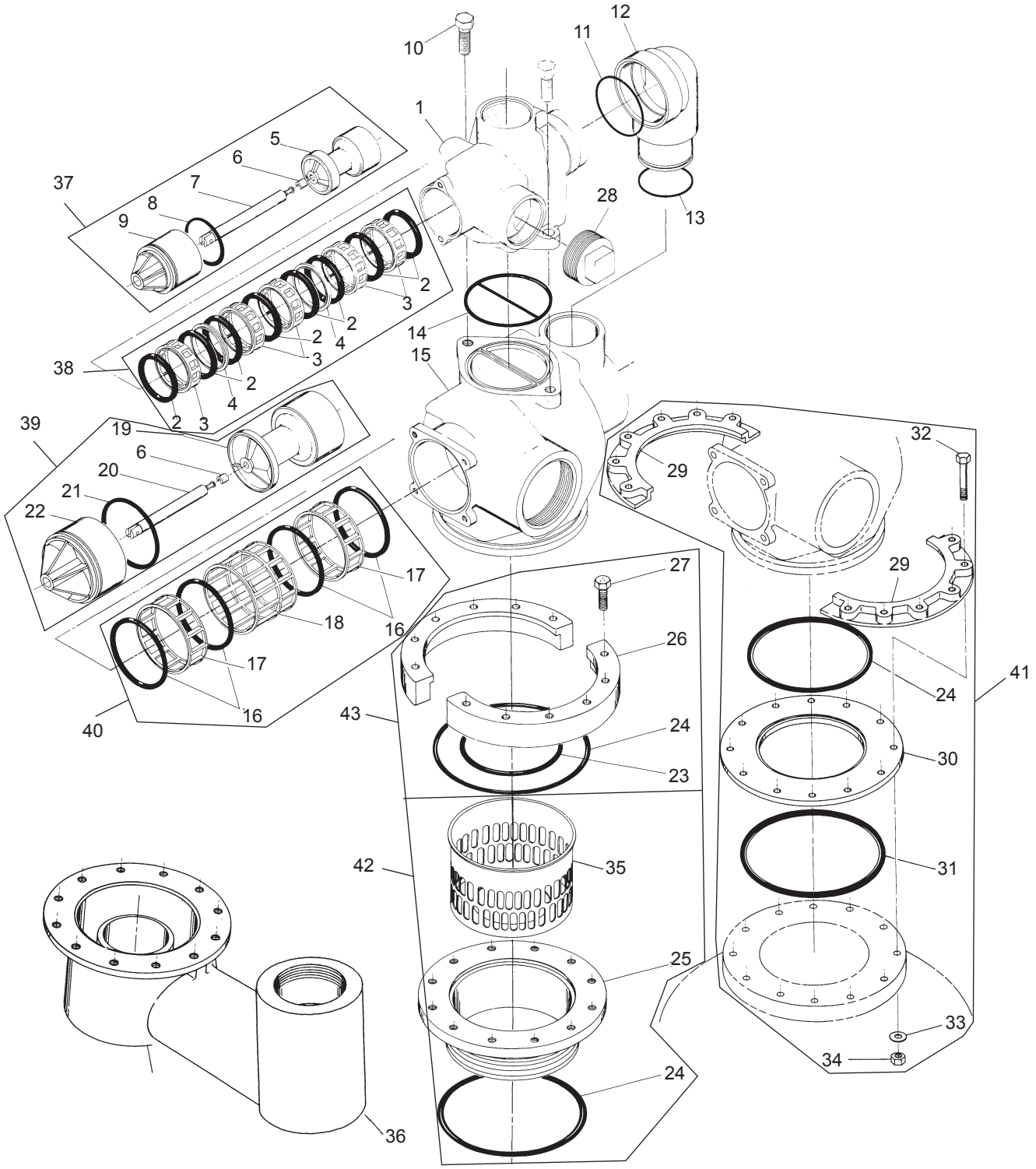


Item No.	QTY	Part No.	Description
1	1	19305	Back Plate, 3900 Lower, Enviromental
2	1	16086	Bracket - Motor Mounting
3	2	16346	Nut
4	1	40392	Drive Motor - 115 V. 50/60 Hz.
		40390	Drive Motor - 220 V. 50/60 Hz.
		42581	Drive Motor - 24 VAC/DC 50/60 Hz.
5	2	18692	Washer, Sealing
6	2	18691	Connector, Conduit
7	1	17797	Bracket - Switch Mounting
8	1	18693	Conduit, Interdrive
9	4	11235	Nut, 1/4-20
10	1	17845-03	Pin, Hinge
11	1	10218	Switch
12	2	10302	Insulator - Switch
13	4	10231	Screw - Hex Head, 1/4-20 x 1/2, 18-8 S.S.
14	1	16053	Bracket - Brine Side
15	2	16052	Bushing
16	1	16059	Washer
17	1	16051	Retaining Ring - Bowed “E”
18	2	11805	Screw, RD HD, 4-40 x 5/8", Type 1, Steel/Zinc
20	2	17567	Screw - Hex Head, WSH, 8 x 1/2, Type B, 18-8, S.S.
21	2	12288	Washer, Lock, Internal #8
22	1	16495	Cam Assembly
23	4	11224	Screw - Hex Head, 5/16-18 x 5/8, S.S.

Item No.	QTY	Part No.	Description
24	1	19813/41536	Screw O-ring, Cover
25	1	60240-22	Cover, Black, Lower, Enviromental
26			Includes Item No: 2, 4, 7, 11, 12, 15, 18, 20, 21, 22, 23, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40
		60058-01	Lower Drive Assy, 3900, 120V
		60058-03	Lower Drive Mtr Assy, 3900, 24V
27	*		3900 Lower Powerhead Assy
28	1	16048-01	Bearing - Drive Link
29	2	11080	Screw - Flt HD Mach, 8-32 x 3/8, Steel Zinc
30	1	16046	Drive Gear
31	1	16050	Retaining Ring
32	2	11774	Retaining Ring - “E”
33	1	19315	Indicator
34	4	10872	Screw - Hex Head, 8-32 x 17/64, Steel/Trivalent Zinc
35	1	18726	Space, Indicator
36	1	11709	Pin - Drive Link
37	1	16047	Drive Link
38	1	11898	Clip
39	1	16045	Drive Pinion
40	1	11381	Roll Pin
Not Shown			
	1	40405	Wire Harness, Enviromental, System 4, Lower

*Call your distributor for Part Number

CONTROL VALVE



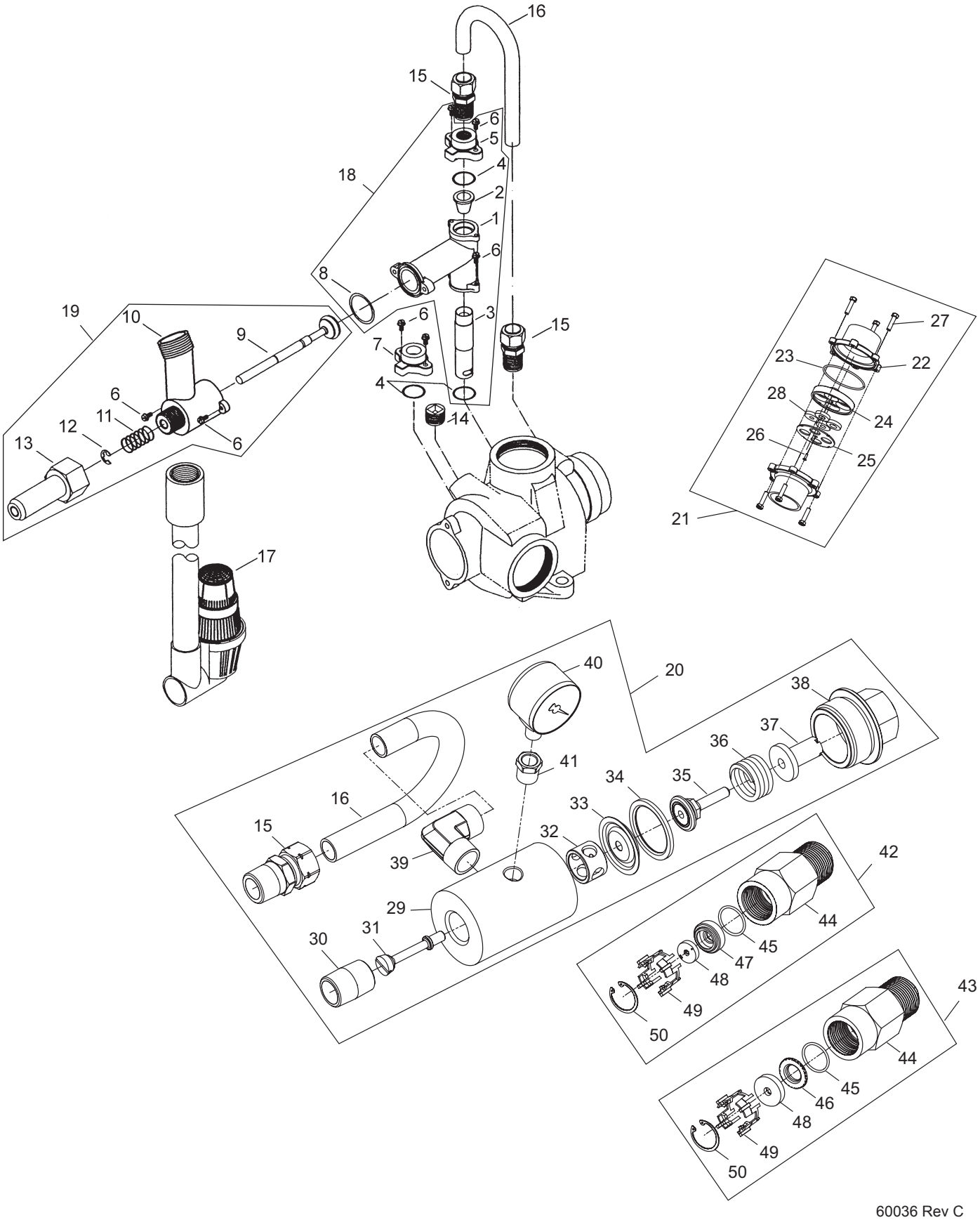
61500-3900

CONTROL VALVE *continued*

Item No.	QTY	Part No.	Description
1	1	15114	Valve Body
2	8	11720	Seal
	8	11720-02	Seal, Silicone
3	5	10369	Spacer - Port
4	2	10368	Spacer
5	1	16130	Piston
6	2	14818	Clip - Piston Rod
7	1	15125	Piston Rod
8	1	14922	O-ring -035
9	1	16398-01	End Plug Assembly
10	2	40118	Screw - Hex Head
11	1	16078	O-ring - 149
12	1	16074	Coupling
13	1	16077	O-ring - 140
14	1	15112	Seal
15	1	16067-02	3" Adapter Body
16	4	16068	Seal
	4	41534	Seal, 3900, 558 BP
17	2	16069	Spacer - Narrow
18	1	16070	Spacer - Wide
19	1	16071	Piston
	1	16082	Piston - No Hard Water Bypass
20	1	16072	Piston Rod
21	1	16076	O-ring - 042
22	1	16399-01	End Plug Assy - White
	1	16399-11	End Plug Assy - Black, NHWB-P
23	1	16800	O-ring - 238
24	2	16345	O-ring - 362
25	1	16255	Tank Adapter - 6" -8
26	2	16257	Flange Segment
27	12	11238	Screw - Hex Head
28	1	16088	Pipe Plug - 2" NPT
35	1	16258	Flow Disperser
37		60106-00	Piston Assy, 3900/3150 STD
		60106-10	Piston Assy, 3150, Upflow
38		60131	Seal & Spacer Kit, 3900 Upper, 3150
		60131-10	Seal & Spacer Kit, Silicone, Chemical Resistent, 3900 Upper, 3150
39		60107-00	Piston Assy, 3900, HWBP, Lower
		60107-10	Piston Assy, 3900, NHWBP, Lower
40		60132	Seal & Spacer Kit, 3900, Lower
		60132-10	Seal & Spacer Kit, 3900, 558BP Chemical Resistent, Lower
41		60190	Flange Kit, Park & Structural, 09/05 and After
		60191	Flange Kit, Park, 08/05 and Prior
42		60193	Flange Kit, 6" Thread
43		60192	Flange Kit, Welded

Item No.	QTY	Part No.	Description
Options			
29	2	16482	Flange Segment
30	1	16483	Flange Ring
31	1	16484	O-Ring -442
32	12	16517	Screw, Park Tank
	12	19592	Screw, Structural Tank
33	12	18619	Washer
34	12	16346	Nut
36	1	18584	Adapter, Side Mount

1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY



60036 Rev C

1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY *continued*

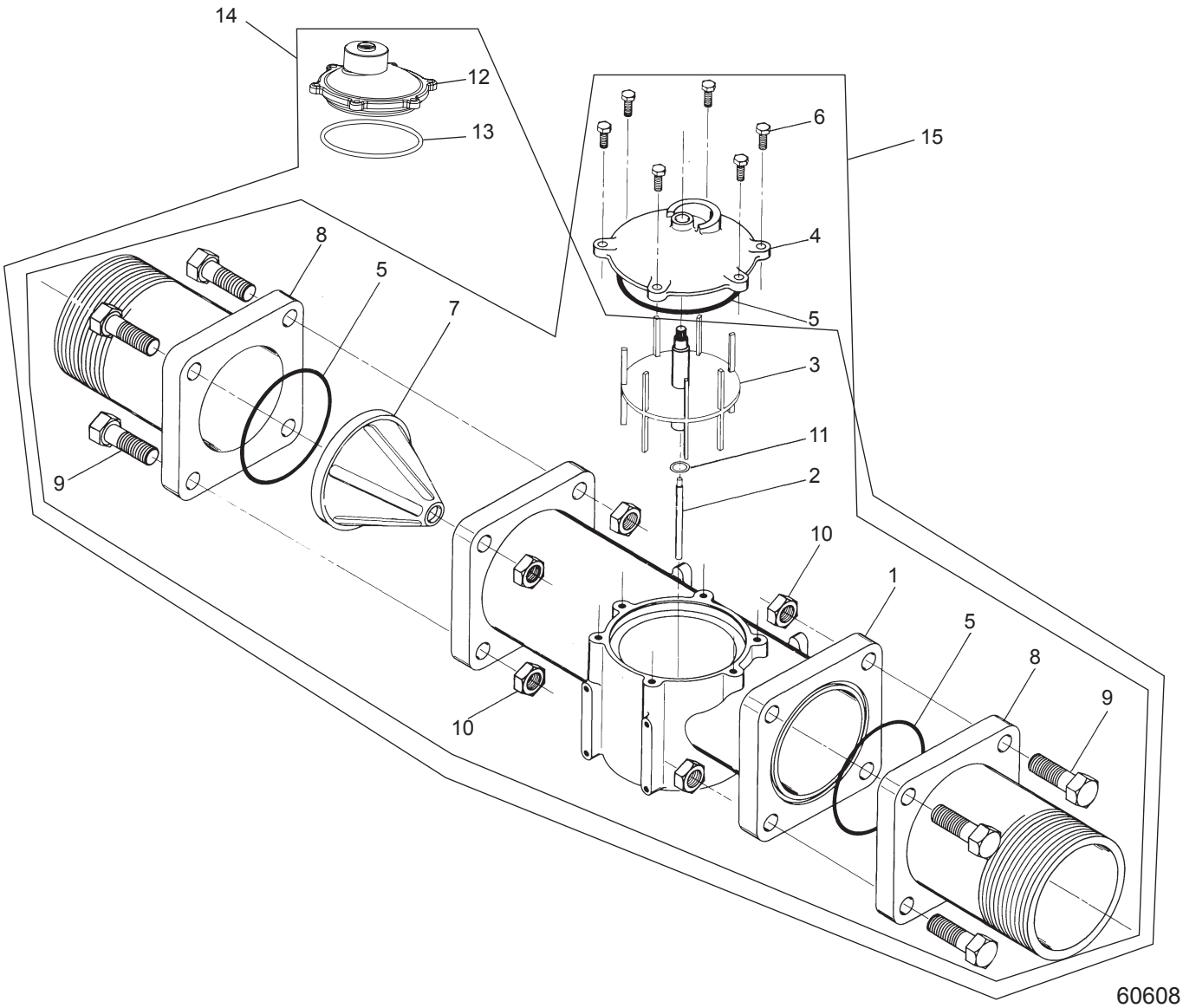
Item No.	QTY	Part No.	Description
1	1	16340	Body, Injector, 1800 D/F
		16340-20	Body, Injector, 1800, Downflow, Metric
		16340-01	Body, Injector, 1800 Upflow
		16340-21	Body, Injector, 1800, Upflow, Metric
2	1	15128-xx	Injector Nozzle
		15128-04	#4 Green
		15128-05	#5 Red
		15128-06	#6 White
		15128-07	#7 Blue
		15128-08	#8 Yellow
		15128-09	#9 Violet
		15128-10	#10 Black
3	1	15127-xx	Injector Throat
		15127-04	#4 Green
		15127-05	#5 Red
		15127-06	#6 White
		15127-07	#7 Blue
		15127-08	#8 Yellow
		15127-09	#9 Violet
		15127-10	#10 Black
4	3	15246	O-ring, -116
5	1	16341-01	Cap, Injector, 1800
6	8	12473	Screw, Hex Wsh, 10-24 x 5/8
7	1	16341-02	Plug, Injector, 1800
8	1	19054	O-ring, -021, 560CD
9	1	16497-01	Stem Assy, 1800, Brine Valve
10	1	18713	Brine Valve Body, 1800
11	1	11772	Spring, 3150 Brine Valve
12	1	11774	Ring, Retaining
13	1	16498-01	Stem Guide Assy, Brine
14	1	16387	Plug, Pipe, 1/2" NPT
15	2	18702	Fitting, Tube, 1/2 NPT 5/8
16	1	18703	Tube, Brine, 5/8 OD Annealed
		18703-01	Tube, Brine, 5/8 OD, Short, Upflow
17	1	60009-00	Air Check, #900, Commercial Less Fittings
		60009-01	Air Check, #900, Commercial, HW Less Fittings

Item No.	QTY	Part No.	Description
18		60277-04	Injector Assy, 1800, #4, Downflow
		60272-04	Injectory Assy, 1800, #4, Upflow
		60277-05	Injectory Assy, 1800 #5, Downflow
		60272-05	Injector Assy, 1800, #5, Upflow
		60277-06	Injector Assy, 1800, #6, Downflow
		60277-07	Injector Assy, 1800, #7, Downflow
		60272-07	Injector Assy, 1800, #7, Upflow
		60277-08	Injector Assy, 1800, #8, Downflow
		60277-09	Injectory Assy, 1800 #9, Downflow
		60277-10	Injectory Assy, 1800 #10, Downflow
19		60036-02	Brine Valve, 1800, Design 3
		60276-01	Brine Valve, 1800, Retrofit Kit, Downflow 1800 Injector and Brine Valve, Update to Design 3
20		60734	Regulator, 3150/3900, Pressure, Upflow

1800 SERIES BRINE SYSTEM AND DRAIN LINE FLOW CONTROL ASSEMBLY *continued*

Item No.	QTY	Part No.	Description
21		60711-000	DLFC, 2" NPT, Less BTTNS, w/4 HLS
		60711-00	DLFC, 2" NPT, Less BTTNS, W/2 HLS
		60711-01	DLFC, 2" NPT, Less BTTNS, W/1 HLS
		60711-20	DLFC, 2" NPT, 20 gpm
		60711-25	DLFC, 2" NPT, 25 gpm
		60711-30	DLFC, 2" NPT, 30 gpm
		60711-35	DLFC, 2" NPT, 35 gpm
		60711-40	DLFC, 2" NPT, 40 gpm
		60711-45	DLFC, 2" NPT, 45 gpm
		60711-50	DLFC, 2" NPT, 50 gpm
		60711-55	DLFC, 2" NPT, 55 gpm
		60711-60	DLFC, 2" NPT, 60 gpm
		60711-65	DLFC, 2" NPT, 65 gpm
		60711-70	DLFC, 2" NPT, 70 gpm
		60711-75	DLFC, 2" NPT, 75 gpm
		60711-80	DLFC, 2" NPT, 80 gpm
		60711-85	DLFC, 2" NPT, 85 gpm
		60711-90	DLFC, 2" NPT, 90 gpm
		60711-95	DLFC, 2" NPT, 95 gpm
		60711-100	DLFC, 2" NPT, 100 gpm
		60812-30	DLFC, 2" BSP/Metric, 30 gpm
		60812-35	DLFC, 2" BSP/Metric, 35 gpm
		60812-45	DLFC, 2" BSP/Metric, 45 gpm
		60812-50	DLFC, 2" BSP/Metric, 50 gpm
		60812-55	DLFC, 2" BSP/Metric, 55 gpm
		60812-70	DLFC, 2" BSP/Metric, 70 gpm
		60812-75	DLFC, 2" BSP/Metric, 75 gpm
		60812-80	DLFC, 2" BSP/Metric, 80 gpm
		60812-90	DLFC, 2" BSP/Metric, 90 gpm
		60812-95	DLFC, 2" BSP/Metric, 95 gpm
		60812-100	DLFC, 2" BSP/Metric, 100 gpm
22	2	27913-21	Housing, Flow Control, 2" BSP
23		16804	O-ring, -150
24	1	16649	Holder, DLFC Button
25	1	16650	Cover Plate DLFC
26	1	13898	Screw, Flat HD, Phil, Steel
27	6	13386	Screw, Hex HD MACH, 1/4-20 x 1 OR Slot Hex Cap Screw 18-8 S.S.
	6	17976	Screw, Hex HD, M6 x 25 mm
28		16529	Washer, Flow, 10.0 gpm
		16736	Washer, Flow, 15.0 gpm
		16528	Washer, Flow, 20.0 gpm
		16737	Washer, Flow, 25.0 gpm
29	1	19089	Body Regulator 3150
30	1	10242	Fitting, Nipple, 1/2", Close
31	1	19091	Pin, Regulator 3150
32	1	19093	Stand-Off Regulator 3150
33	1	19095	Diaphragm, Regulator 3150
34	1	19094	Washer, Regulator 3150
35	1	19092	Retainer, Regulator 3150
36	1	19101	Spring, Regulator 3150
37	1	19399	Washer, Calibration 3150
38	1	19090	Cap, Regulator 3150
39	1	19278	Fitting, Tube, 90 Deg
40	1	19693	Pressure Gauge
41	1	41232	Bushing Reducer 1/4 x 1/8
42		60710-1.2	BLFC, 1"F x 1"M, NPT, 1.2 gpm
		60710-2.0	BLFC, 1"F x 1"M, NPT, 2.0 gpm
		60710-2.4	BLFC, 1"F x 1"M, NPT, 2.4 gpm
		60710-3.0	BLFC, 1"F x 1"M, NPT, 3.0 gpm
		60710-3.5	BLFC, 1"F x 1"M, NPT, 3.5 gpm
		60710-4.0	BLFC, 1"F x 1"M, NPT, 4.0 gpm
		60710-5.0	BLFC, 1"F x 1"M, NPT, 5.0 gpm
		60710-7.0	BLFC, 1"F x 1"M, NPT, 7.0 gpm
43		60710-9.0	BLFC, 1"F x 1"M, NPT, 9.0 gpm
		60710-10	BLFC, 1"F x 1"M, NPT, 10 gpm
		60710-12	BLFC, 1"F x 1"M, NPT, 12 gpm
		60710-15	BLFC, 1"F x 1"M, NPT, 15 gpm
		60710-20	BLFC, 1"F x 1"M, NPT, 20 gpm
		60710-25	BLFC, 1"F x 1"M, NPT, 25 gpm
44		16530	Housing, BLFC, 1"M x 1"F
45		19292	O-ring, -020
46		19279	Retainer, Flow Control, Flow 9.0 - 25 gpm
47		19053	Retainer, Flow Control, Flow 2.0 - 7.0 gpm
48		12085	Washer, Flow, 1.2 gpm
		12087	Washer, Flow, 2.0 gpm
		12088	Washer, Flow, 2.4 gpm
		12089	Washer, Flow, 3.0 gpm
		12090	Washer, Flow, 3.5 gpm
		12091	Washer, Flow, 4.0 gpm
		12092	Washer, Flow, 5.0 gpm
		12408	Washer, Fow, 7.0 gpm
		17944	Washer, Flow, 9.0 gpm
		16529	Washer, Flow, 10.0 gpm
		16735	Washer, Flow, 12.0 gpm
		16736	Washer, Flow, 15.0 gpm
		16528	Washer, Flow, 20.0 gpm
		16737	Washer, Flow, 25.0 gpm
49		16738	Retainer,Flow Control
50		16805	Ring, Retaining
Not Shown - Option Without Brine Valve			
	1	16605	Retainer Plate
	1	19860	Fitting, Brine Valve, 1800

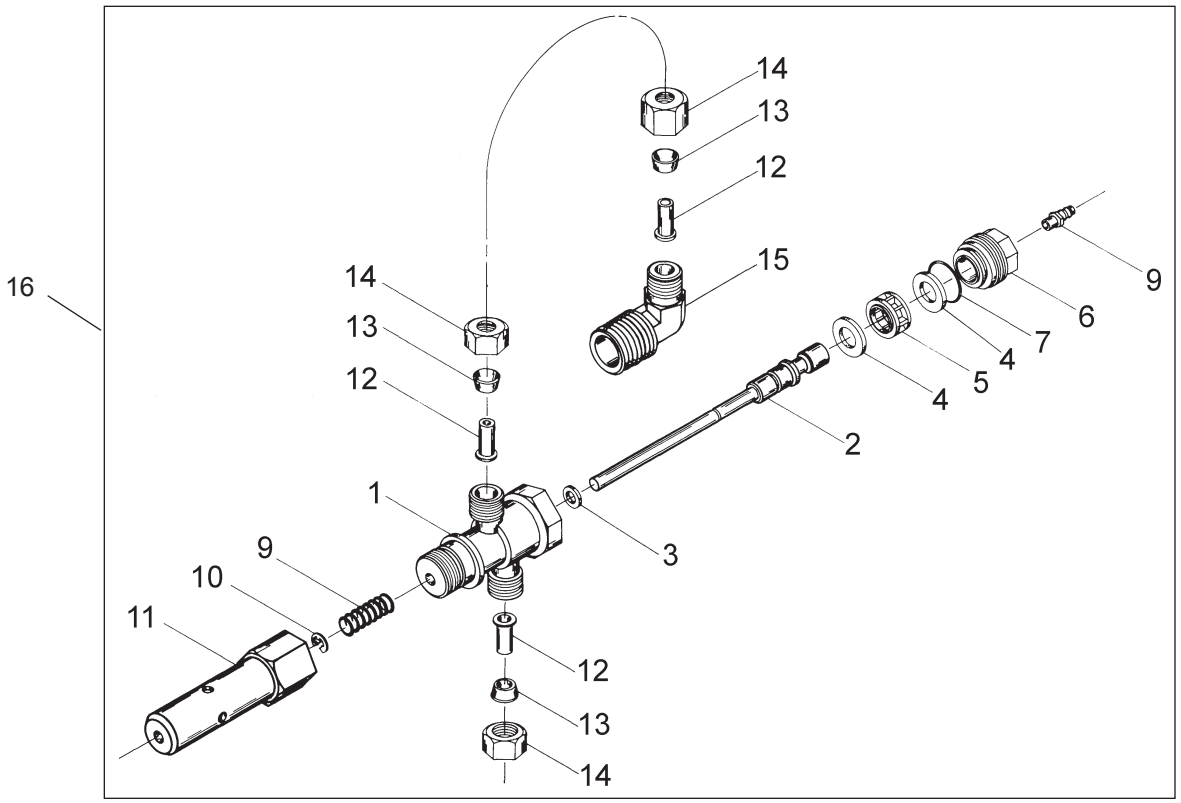
3" METER ASSEMBLY



Item No.	QTY	Part No.	Description
1	1	16254	Meter Body
2	1	16279	Impeller Shaft
3	1	16575	Impeller Assembly
4	1	16400	Meter Cover Assembly - Standard
	1	16401	Meter Cover Assembly - Extended Range
5	3	15707	O-Ring - 236
6	6	12112	Screw - Hex Head
	6	15886	Screw - Hex Head (Metric)
7	1	16280	Flow Straightener
8	2	16328	Connecting Flange
9	8	40118	Screw - Hex Head
	8	17122	Screw - Hex Head (Metric)
10	8	16386	Nut - 1/2-13
11	1	16574	Stainless Steel Washer
12	1	16401	Meter Cap, 3", EXT, BRS, PDL
13	1	15707	O-ring - 236

Item No.	QTY	Part No.	Description
14		60608-02	Meter Assy, 3" Inline, NPT, EXT, Brass, Paddlewheel
		60608-22	Meter Assy, 3" Inline, BSP/ Metric, EXT, Paddlewheel
15		60608-01	Meter Assy, 3" Inline, NPT, STD, Brass, Paddlewheel
		60608-21	Meter Assy, 3" Inline, BSP/ Metric, STD, Paddlewheel

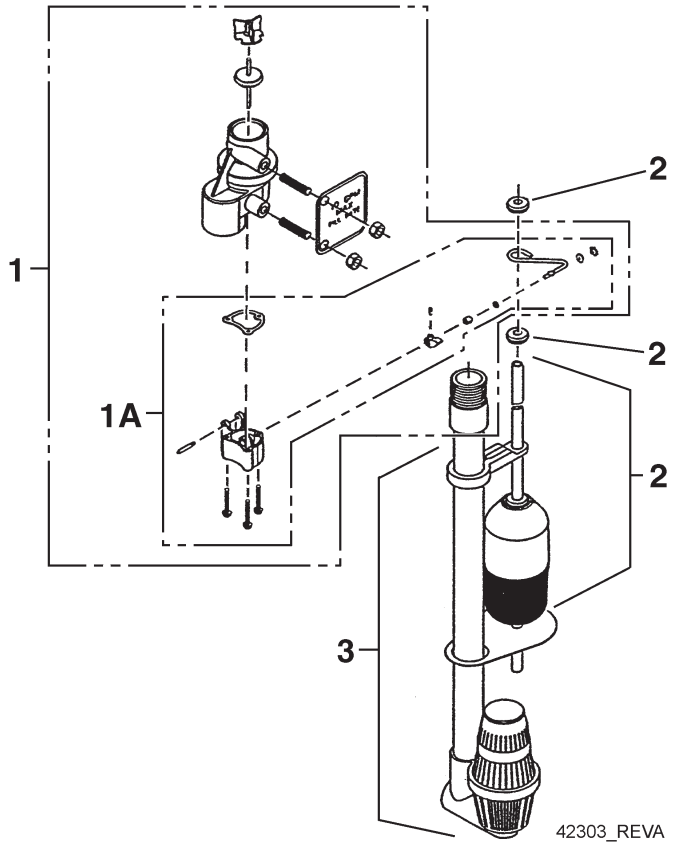
SERVICE VALVE OPERATOR ASSEMBLY



BR60150-3150REVA

Item No.	QTY	Part No.	Description
1	1	15074	Body, SVO
2	1	16065	Piston & Stem, SVO
3	1	10141	O-ring, -010
4	2	14835	Seal, 3150
5	1	14834	Spacer, Softwater Fill
6	1	16509	Plug, End, SVO
7	1	12977	O-ring, -015
8	1	15965	Fitting, Bias
9	1	10249	Spring, Brine Valve
10	1	10250	Ring, Retaining
11	1	16498-02	Stem Guide Assy, SVO
12	3	10332	Fitting, Insert, 3/8
13	3	10330	Fitting, Sleeve, 3/8 Celcon
14	3	10329	Fitting, Tube, 3/8 Nut, Brass
15	1	16503	Fitting, Elbow, 90 Deg.
16	1	60150-3150	SVO Assy, 3150/3900 (Includes Items 1-15)
Not Shown			
	1	16511	Tube, 3150, PVC, SVO

2350 SAFETY BRINE VALVE



Item No.	QTY	Part No.	Description
1	1	60038	Safety Brine Valve, 2350
1A	1	61024	Actuator Assy, 2350 Brine
2	1	60028-30	Float Assy, 2350, 30” Wht
	1	60026-30SAN	Float Assy, 2350, 30” Hot Water
3	1	60009-00	Air Check, #900, Commercial Less Fittings
	1	60009-01	Air Check, #900, Commercial, Hot Water Less Fittings
Not Shown			
	1	18603	Fitting Assy, 900 Air Check 2350
	1	18602	Fitting Assy, 900 Air Check

TROUBLESHOOTING

Problem	Cause	Correction
Water conditioner fails to regenerate.	Electrical service to unit has been interrupted	Assure permanent electrical service (check fuse, plug, pull chain, or switch)
	Timer is defective.	Replace timer.
	Power failure.	Reset time of day.
Hard water.	By-pass valve is open.	Close by-pass valve.
	No salt is in brine tank.	Add salt to brine tank and maintain salt level above water level.
	Injector screen plugged.	Clean injector screen.
	Insufficient water flowing into brine tank.	Check brine tank fill time and clean brine line flow control if plugged.
	Hot water tank hardness.	Repeated flushings of the hot water tank is required.
	Leak at distributor tube.	Make sure distributor tube is not cracked. Check O-ring and tube pilot.
	Internal valve leak.	Replace seals and spacers and/or piston.
Unit used too much salt.	Improper salt setting.	Check salt usage and salt setting.
	Excessive water in brine tank.	See "Excessive water in brine tank".
Loss of water pressure.	Iron buildup in line to water conditioner.	Clean line to water conditioner.
	Iron buildup in water conditioner.	Clean control and add mineral cleaner to mineral bed. Increase frequency of regeneration.
	Inlet of control plugged due to foreign material broken loose from pipes by recent work done on plumbing system.	Remove piston and clean control.
Loss of mineral through drain line.	Air in water system.	Assure that well system has proper air eliminator control. Check for dry well condition.
	Improperly sized drain line flow control.	Check for proper drain rate.
Iron in conditioned water.	Fouled mineral bed.	Check backwash, brine draw, and brine tank fill. Increase frequency of regeneration. Increase backwash time.
Excessive water in brine tank.	Plugged drain line flow control.	Clean flow control.
	Plugged injector system.	Clean injector and screen.
	Timer not cycling.	Replace timer.
	Foreign material in brine valve.	Replace brine valve seat and clean valve.
	Foreign material in brine line flow control.	Clean brine line flow control.
Softener fails to draw brine.	Drain line flow control is plugged.	Clean drain line flow control.
	Injector is plugged.	Clean injector
	Injector screen plugged.	Clean screen.
	Line pressure is too low.	Increase line pressure to 20 psi
	Internal control leak	Change seals, spacers, and piston assembly.
	Service adapter did not cycle.	Check drive motor and switches.
Control cycles continuously.	Misadjusted, broken, or shorted switch.	Determine if switch or timer is faulty and replace it, or replace complete power head.
Drain flows continuously.	Valve is not programming correctly.	Check timer program and positioning of control. Replace power head assembly if not positioning properly.
	Foreign material in control.	Remove power head assembly and inspect bore. Remove foreign material and check control in various regeneration positions.
	Internal control leak.	Replace seals and piston assembly.

GENERAL SERVICE HINTS FOR METER CONTROL

Problem: Softener delivers hard water

Reason: Reserve capacity has been exceeded.

Correction: Check salt dosage requirements and reset program wheel to provide additional reserve.

Reason: Program wheel is not rotating with meter output.

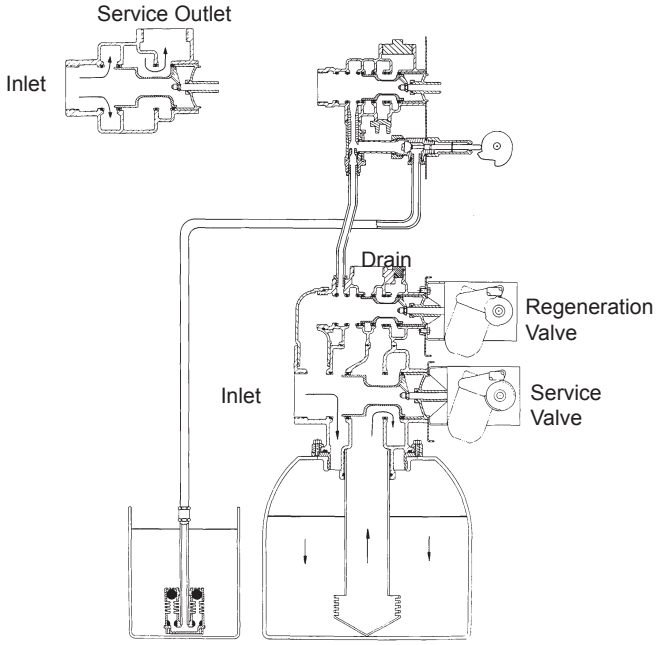
Correction: Pull cable out of meter cover and rotate manually. Program wheel must move without binding and clutch must give positive clicks when program wheel strikes regeneration stop. If it does not, replace timer.

Reason: Meter is not measuring flow.

Correction: Check meter with meter checker.

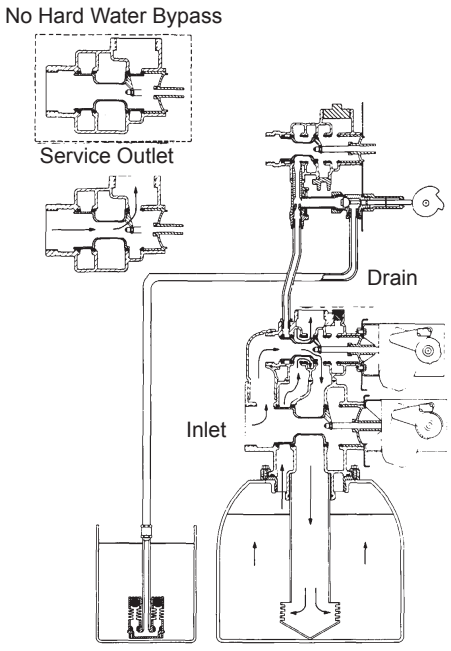
WATER CONDITIONER FLOW DIAGRAMS

1 Service Position



Hard water enters at valve inlet and flows down thru mineral to the bottom distributor. Conditioned water flows up thru the distributor tube, around the piston and out the outlet.

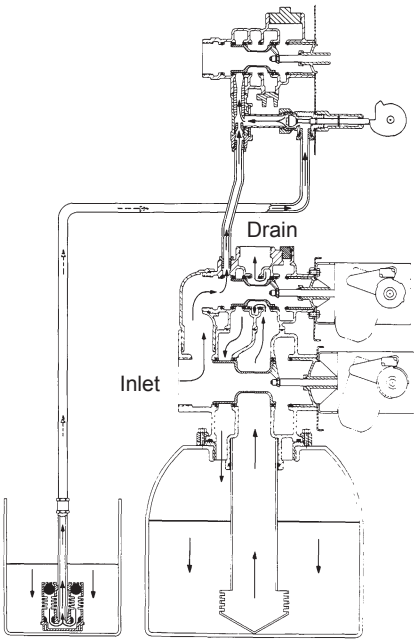
2 Backwash Position



Hard water enters at valve inlet – flows thru service adapter piston for by-pass, and up thru coupling to regeneration valve inlet. Flow continues thru the regeneration valve piston – down the distributor tube – thru the bottom distributor and up thru the mineral – around the piston and out the drain. If optional no hard water by-pass piston is used, water flow to service outlet is prevented by an extension on the service outlet until the end of the rapid rinse cycle or brine tank refill cycle, depending on options chosen.

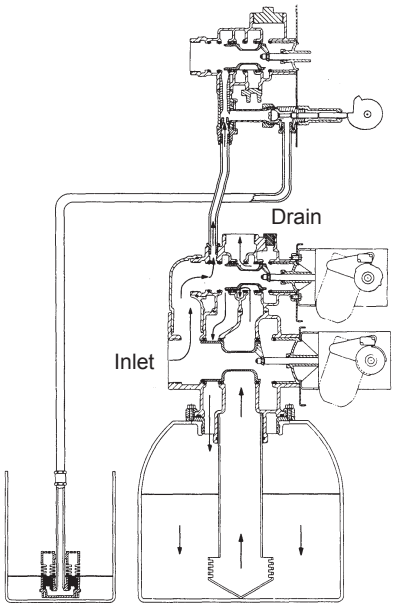
WATER CONDITIONER FLOW DIAGRAMS *continued*

3 Brine Position



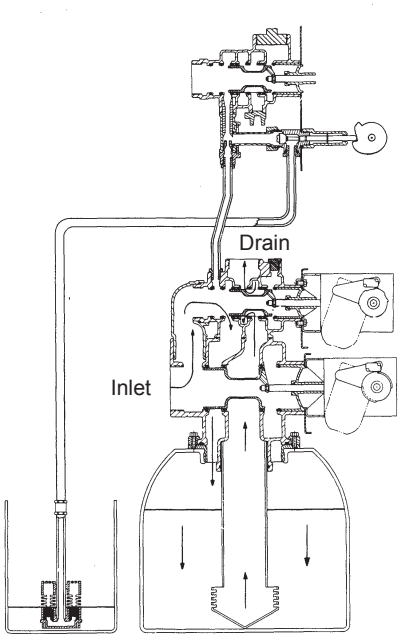
Hard water enters at valve inlet – flows thru injector nozzle and throat to draw brine from the brine tank. Brine flows down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

4 Slow Rinse Position



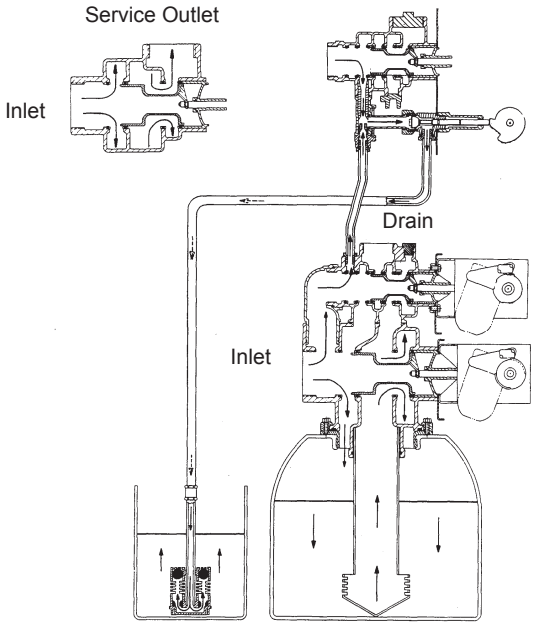
Hard water enters at valve inlet – flows thru injector nozzle and throat – down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

5 Rapid Rinse Position



Hard water enters at valve inlet – flows thru the regeneration valve directly down thru the mineral – into the bottom distributor – up the distributor tube – around the piston and out the drain.

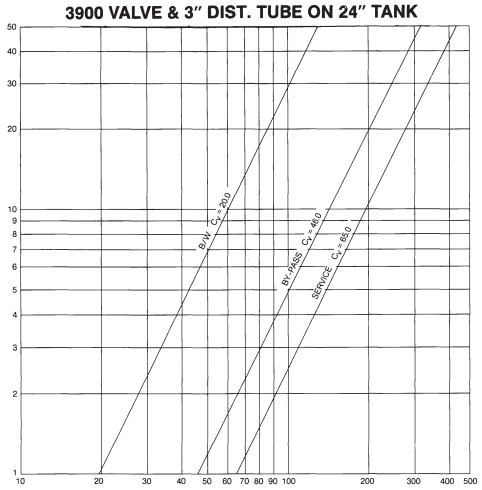
6 Brine Tank Refill Position



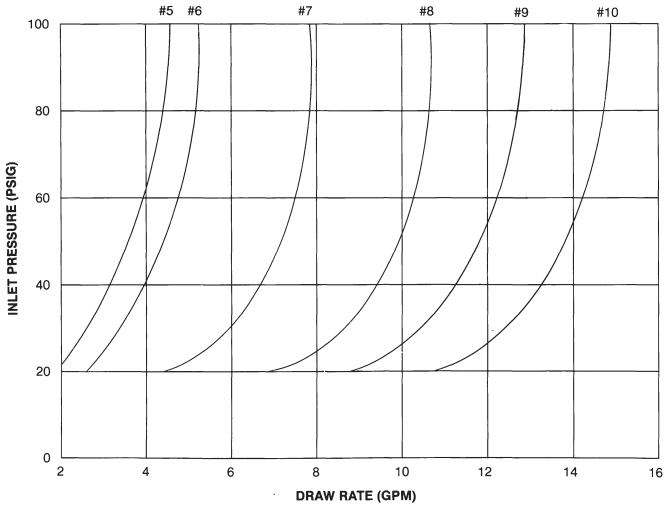
Hard water enters at valve inlet – flows thru nozzle and thru throat to brine valve to refill the brine tank. Inlet flow also continues down thru mineral to the bottom distributor. Conditioned water flows up thru the distributor tube, around the piston and out the outlet. Note: An option is available to keep service valve in by-pass position until the end of brine tank refill cycle.

FLOW DATA & INJECTOR DRAW RATES

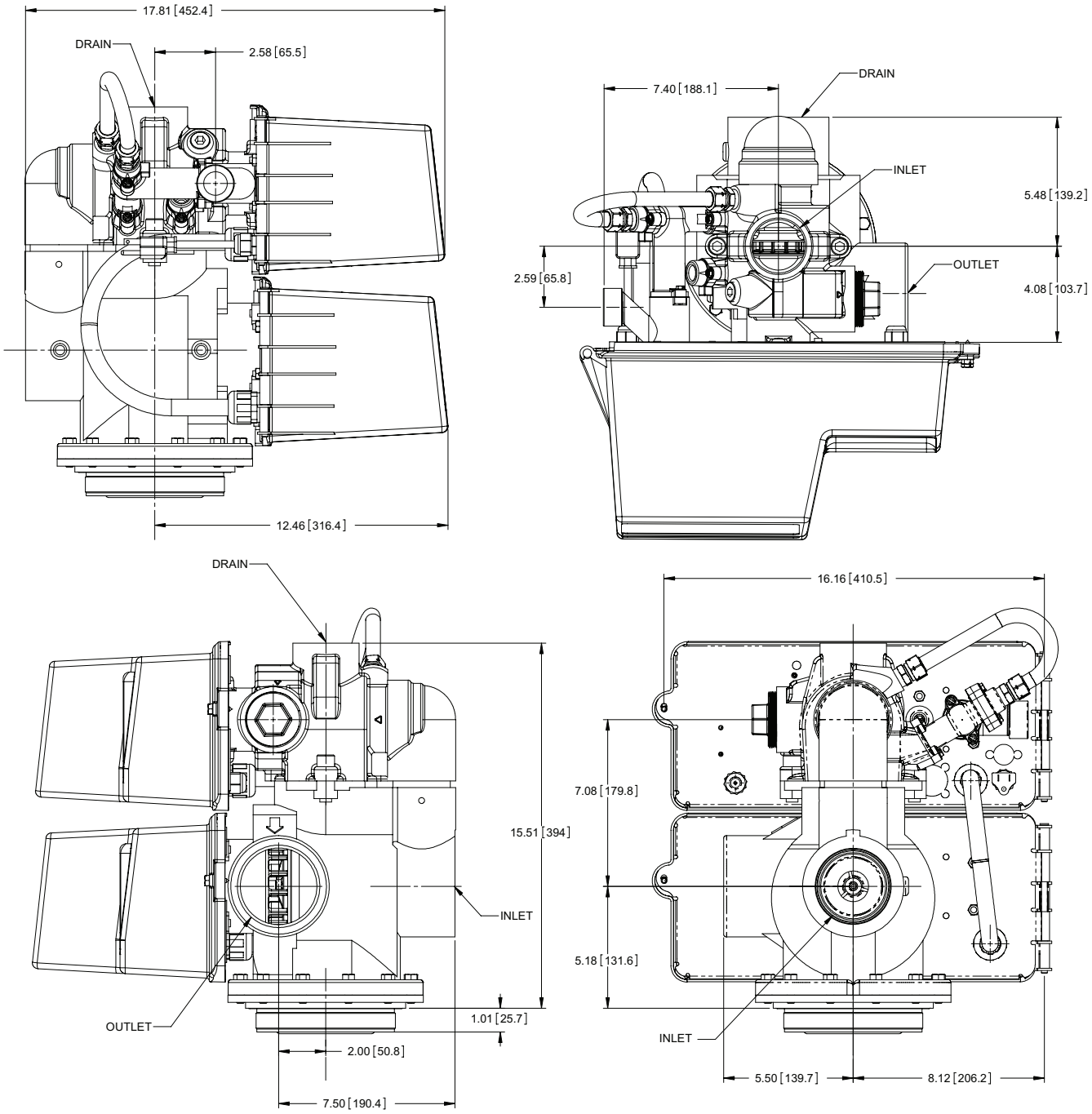
3900 VALVE & 3" DIST. TUBE ON 24" TANK



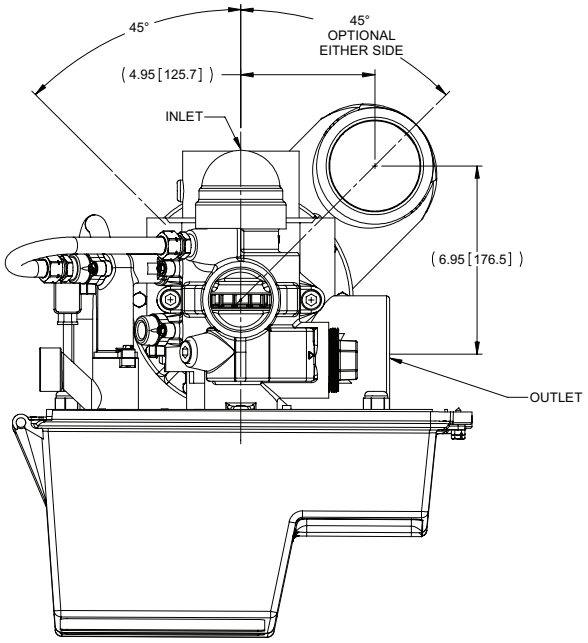
3900 ON EMPTY TANK

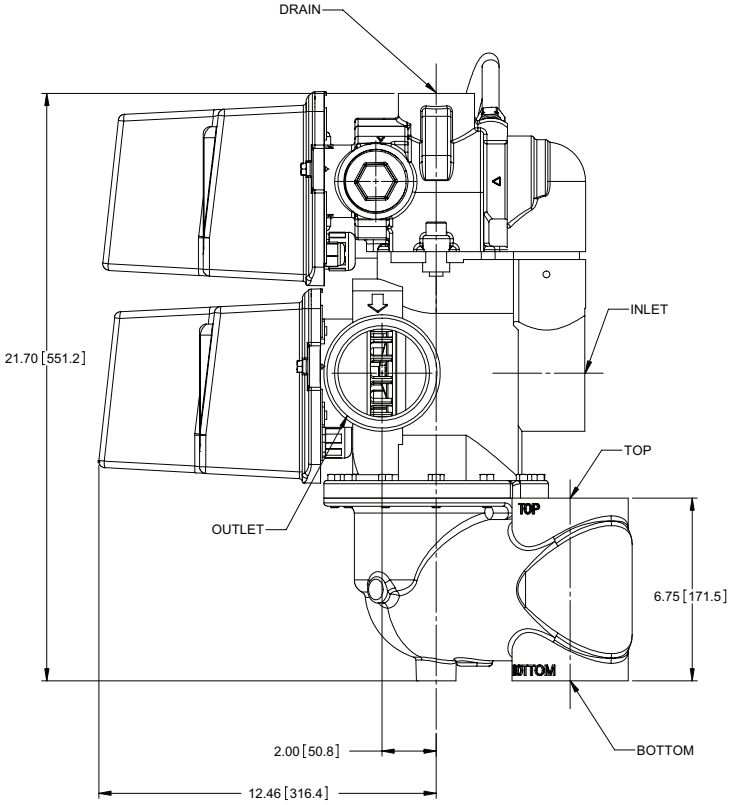


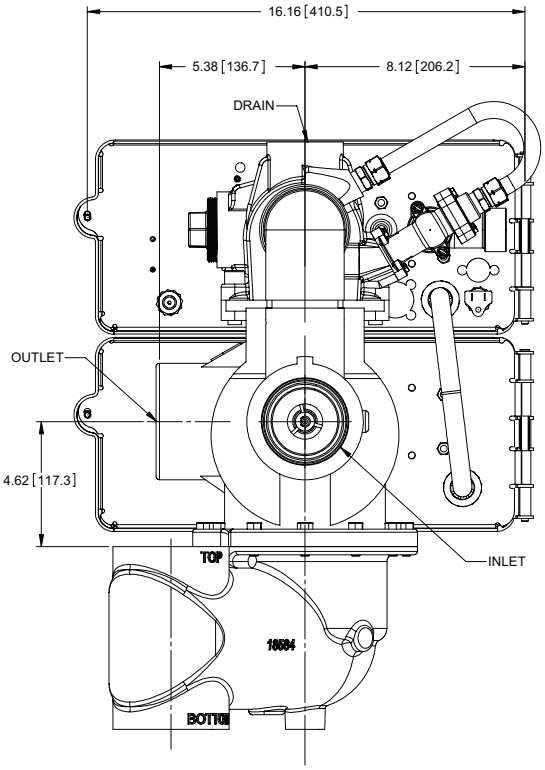
DIMENSIONAL DRAWING 3900 TOP MOUNT



DIMENSIONAL DRAWING 3900 SIDE MOUNT

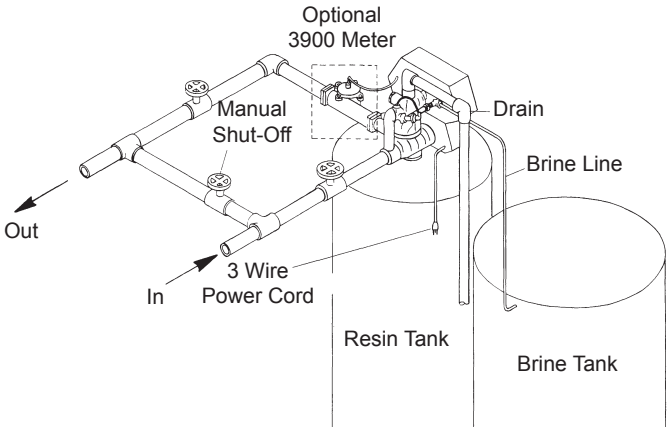




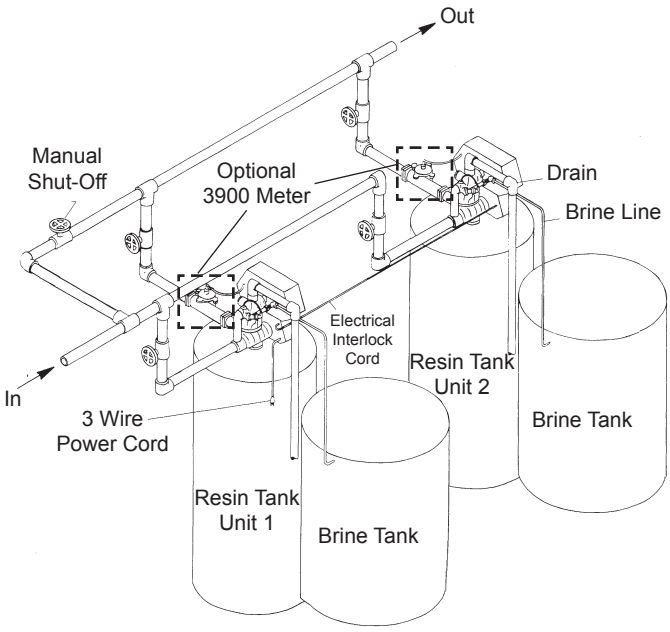


TYPICAL INSTALLATIONS

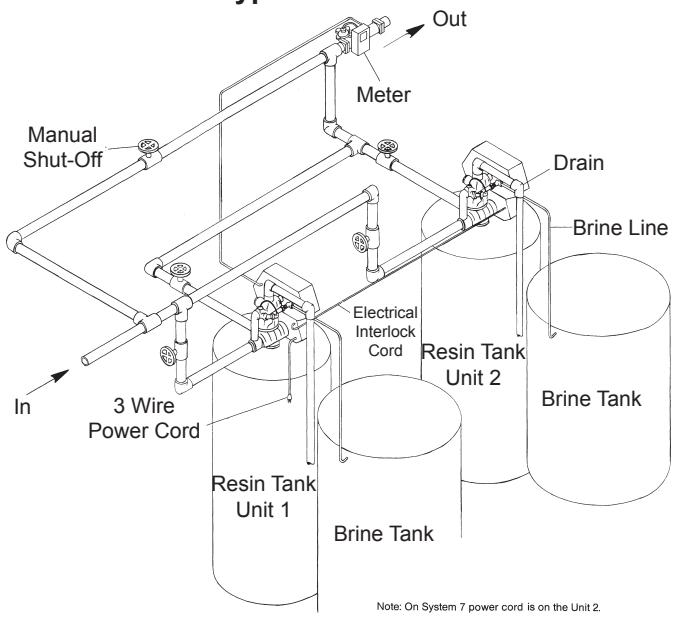
System #4 - Typical Single Tank Installation with Optional Meter



System #5 Interlock - Typical Twin Tank Installation with Optional Meter Interlock and No Hard Water Bypass



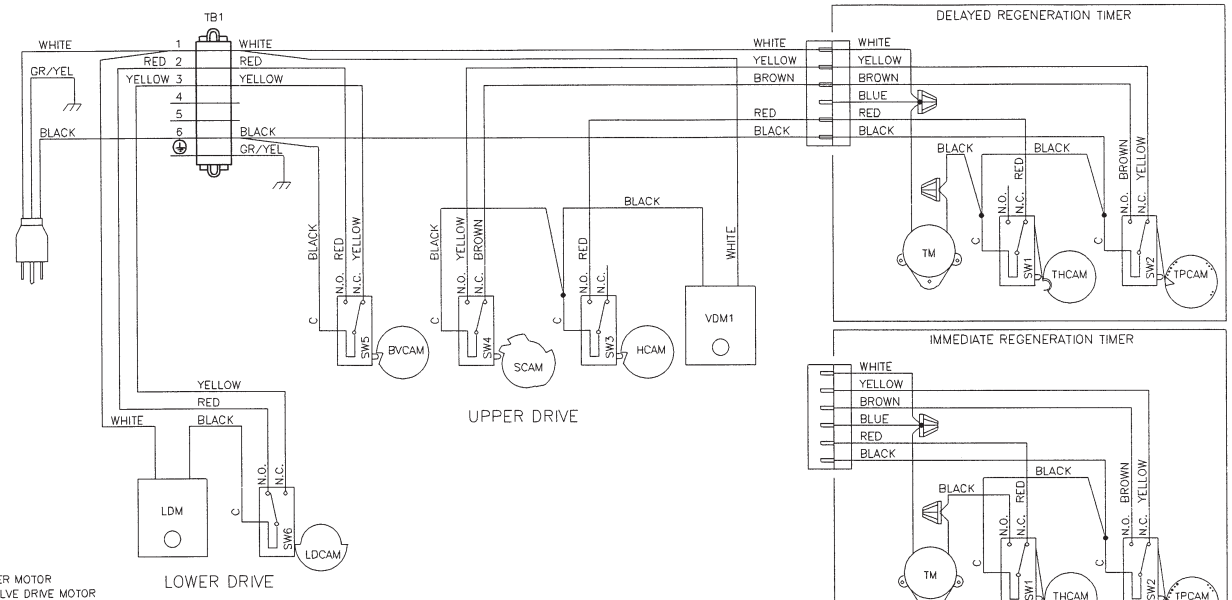
System #6 Interlock - Typical Twin Tank Installation with Optional Meter Interlock and No Hard Water Bypass



Note: On System 7 power cord is on the Unit 2.

VALVE WIRING

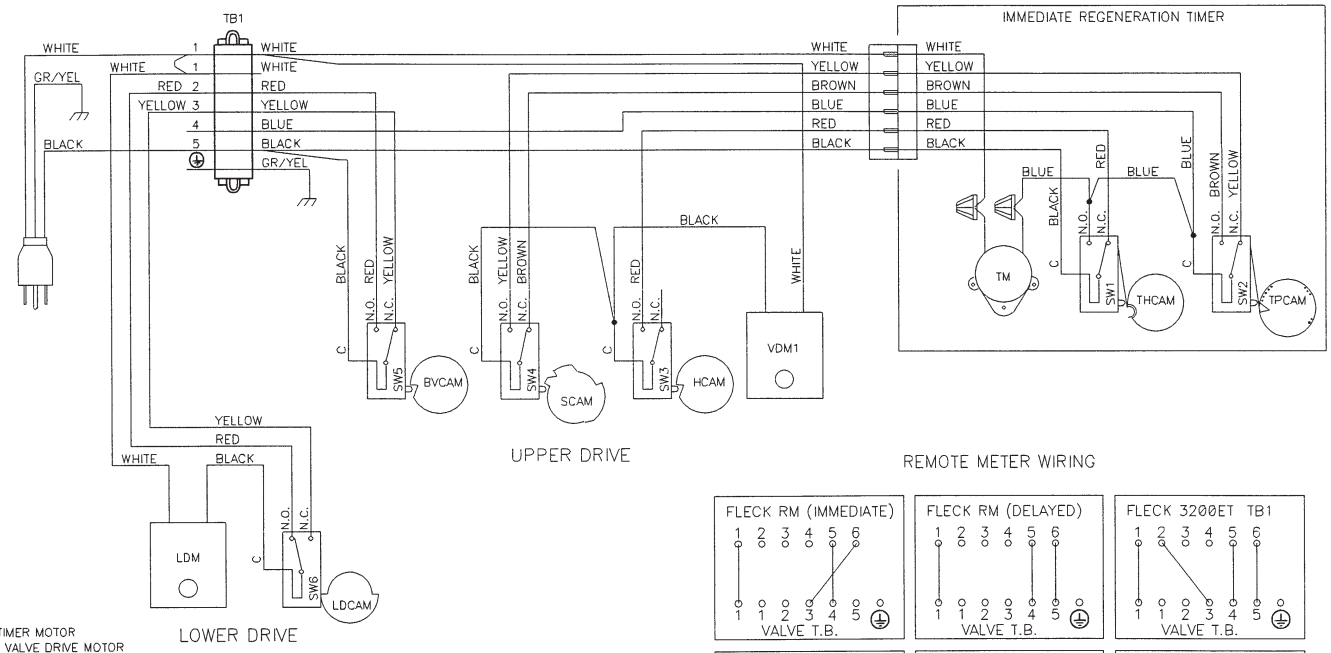
System #4



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM

NOTE:
SINGLE TANK TIMECLOCK, METER DELAYED, OR METER IMMEDIATE REGENERATION

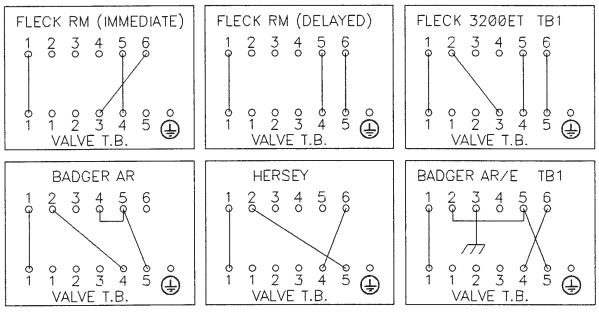
System #4 with Remote Meter



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM

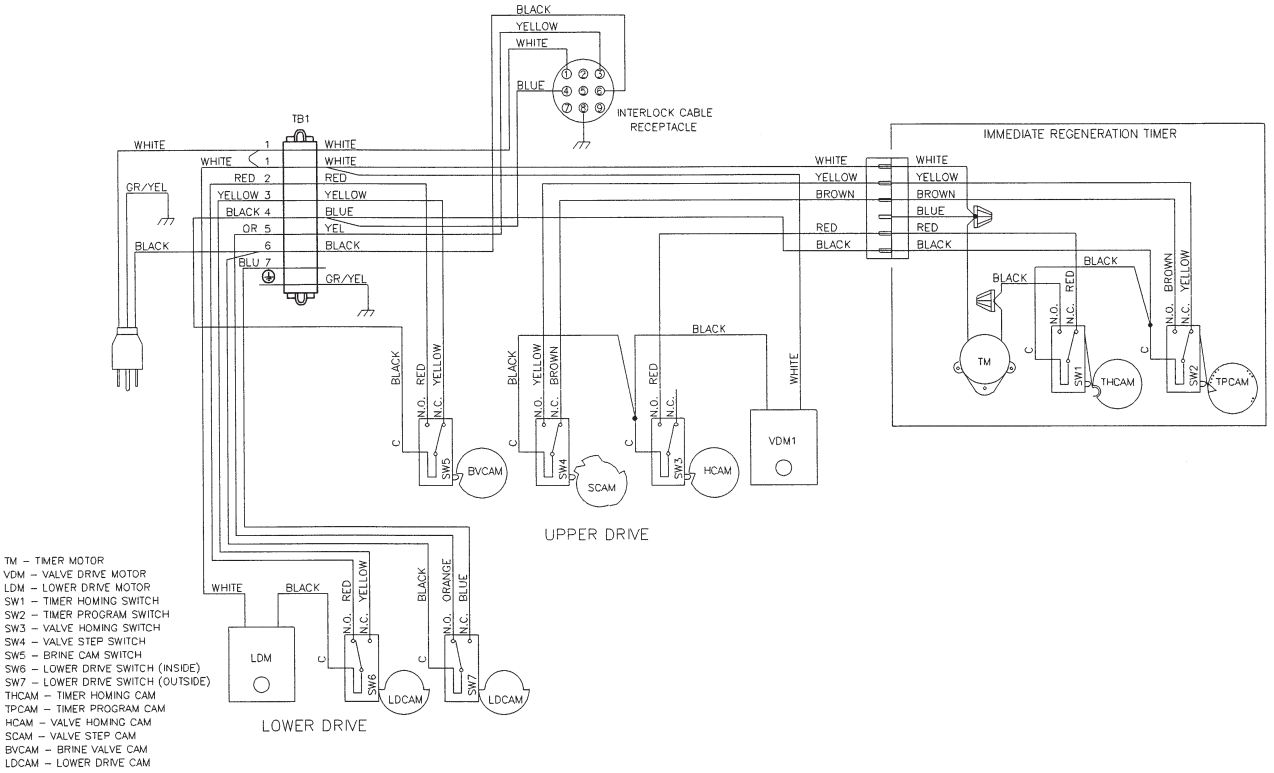
NOTE:
SINGLE TANK REMOTE METER DELAYED, OR IMMEDIATE REGENERATION

REMOTE METER WIRING



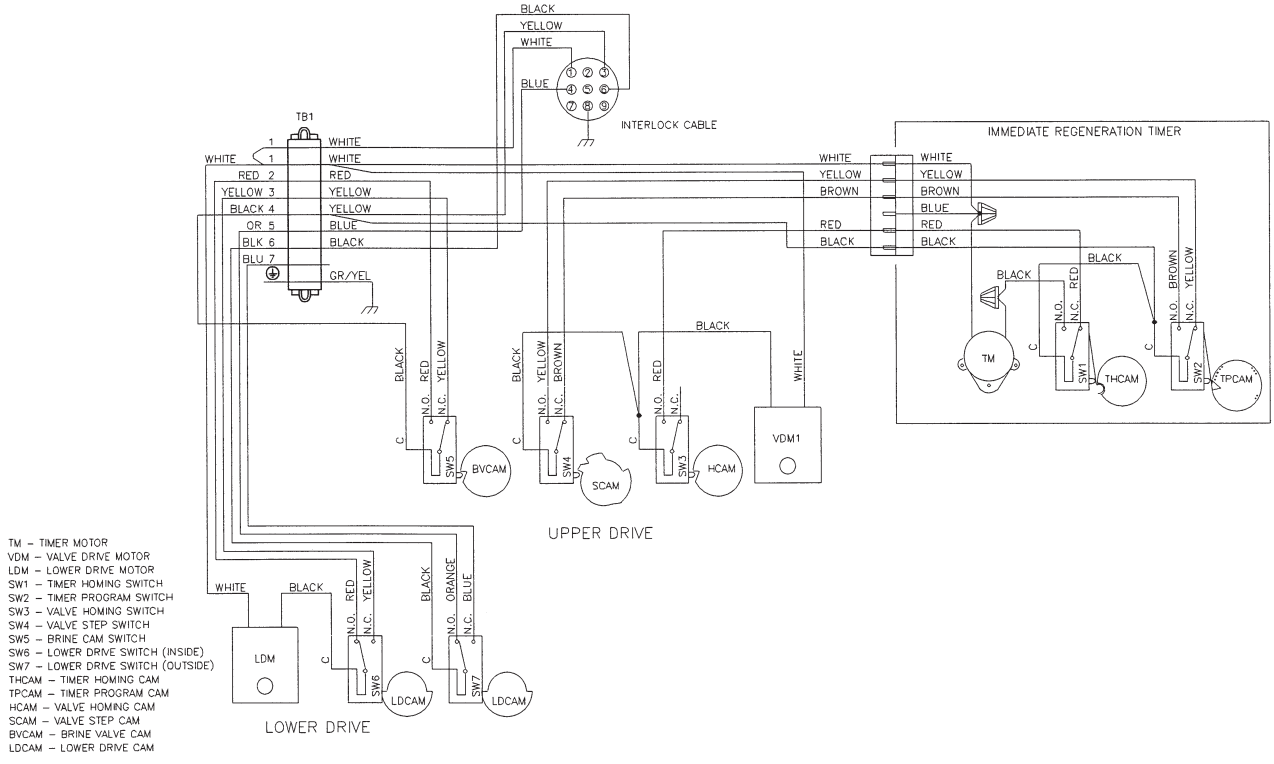
VALVE WIRING *continued*

System #5



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH (INSIDE)
SW7 – LOWER DRIVE SWITCH (OUTSIDE)
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM

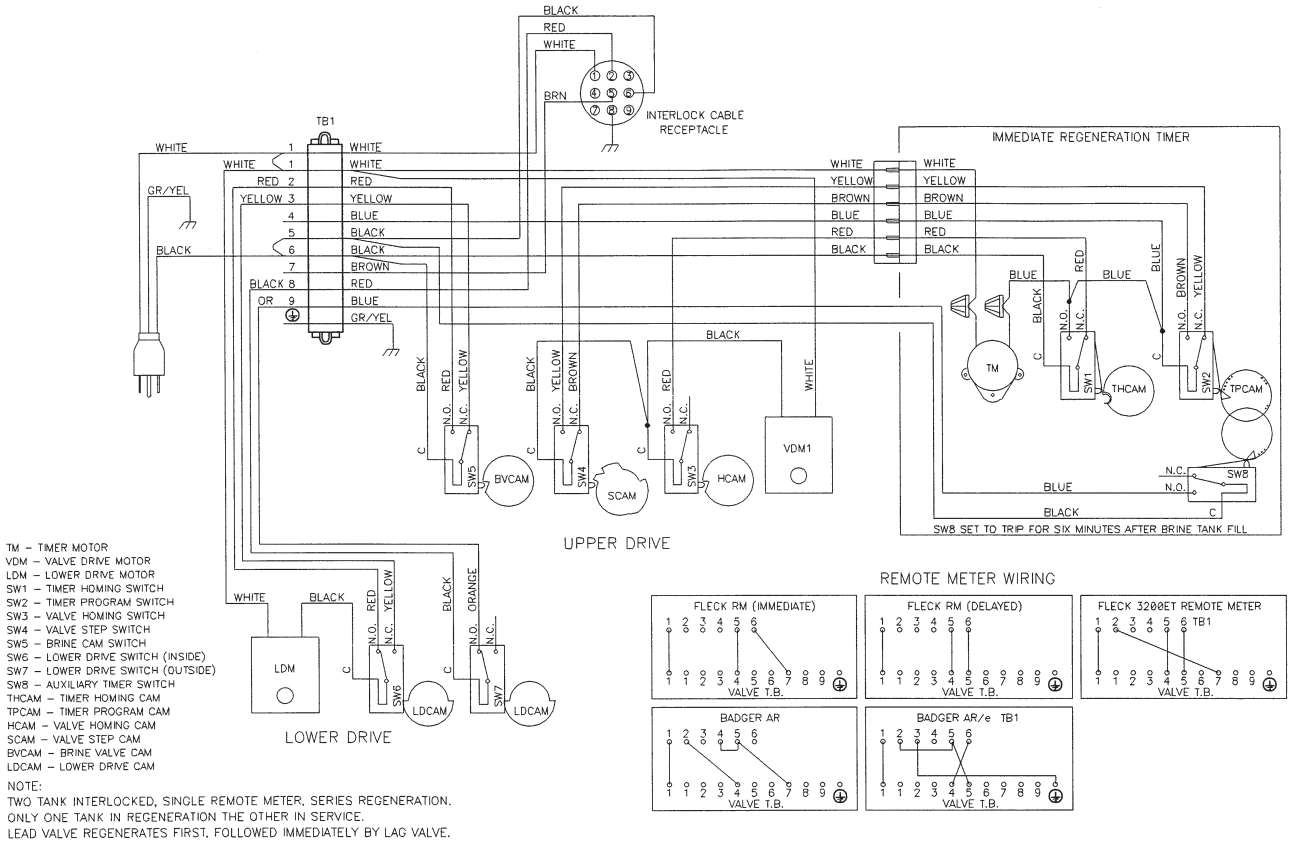
NOTE:
TWO TANK INTERLOCKED, INDIVIDUAL METER, IMMEDIATE REGENERATION.
ONLY ONE TANK IN REGENERATION THE OTHER IN SERVICE.



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH (INSIDE)
SW7 – LOWER DRIVE SWITCH (OUTSIDE)
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM

VALVE WIRING *continued*

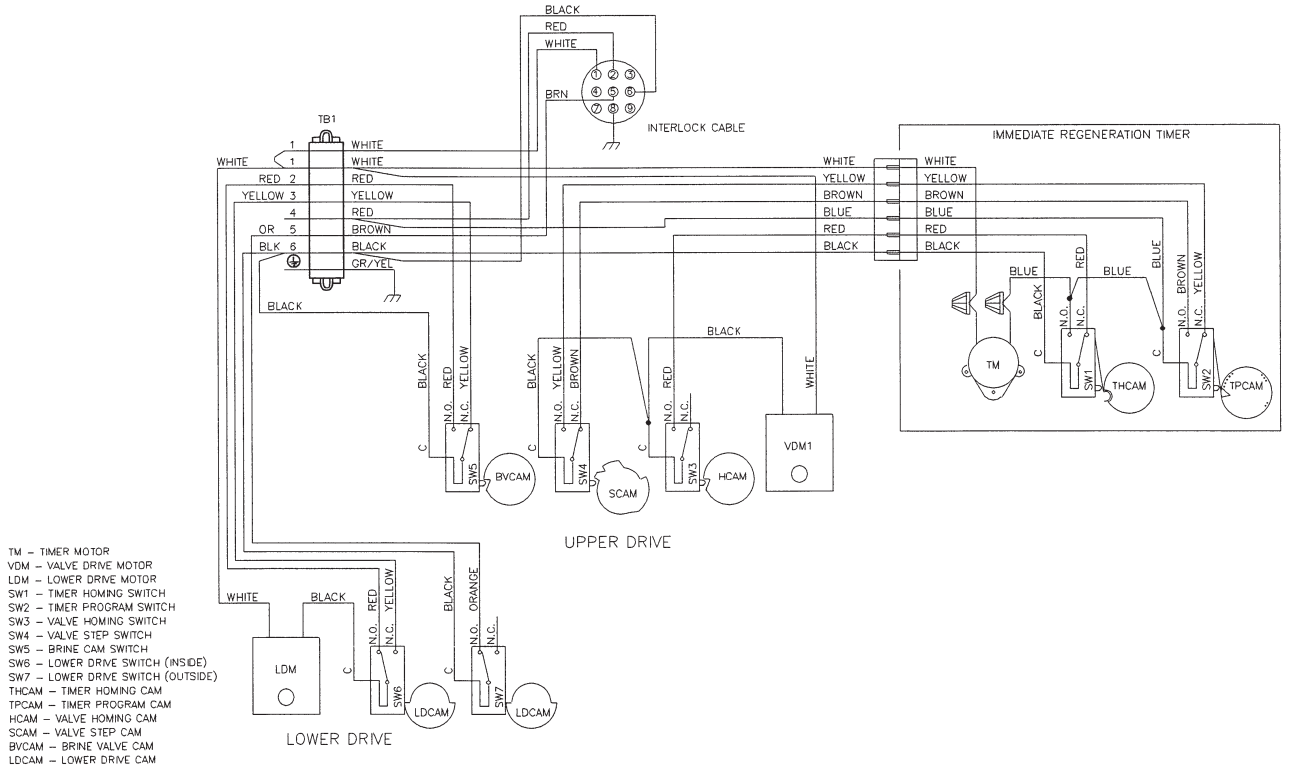
System #6



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH (INSIDE)
SW7 – LOWER DRIVE SWITCH (OUTSIDE)
SW8 – AUXILIARY TIMER SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM

NOTE:
TWO TANK INTERLOCKED, SINGLE REMOTE METER, SERIES REGENERATION.
ONLY ONE TANK IN REGENERATION THE OTHER IN SERVICE.
LEAD VALVE REGENERATES FIRST, FOLLOWED IMMEDIATELY BY LAG VALVE.

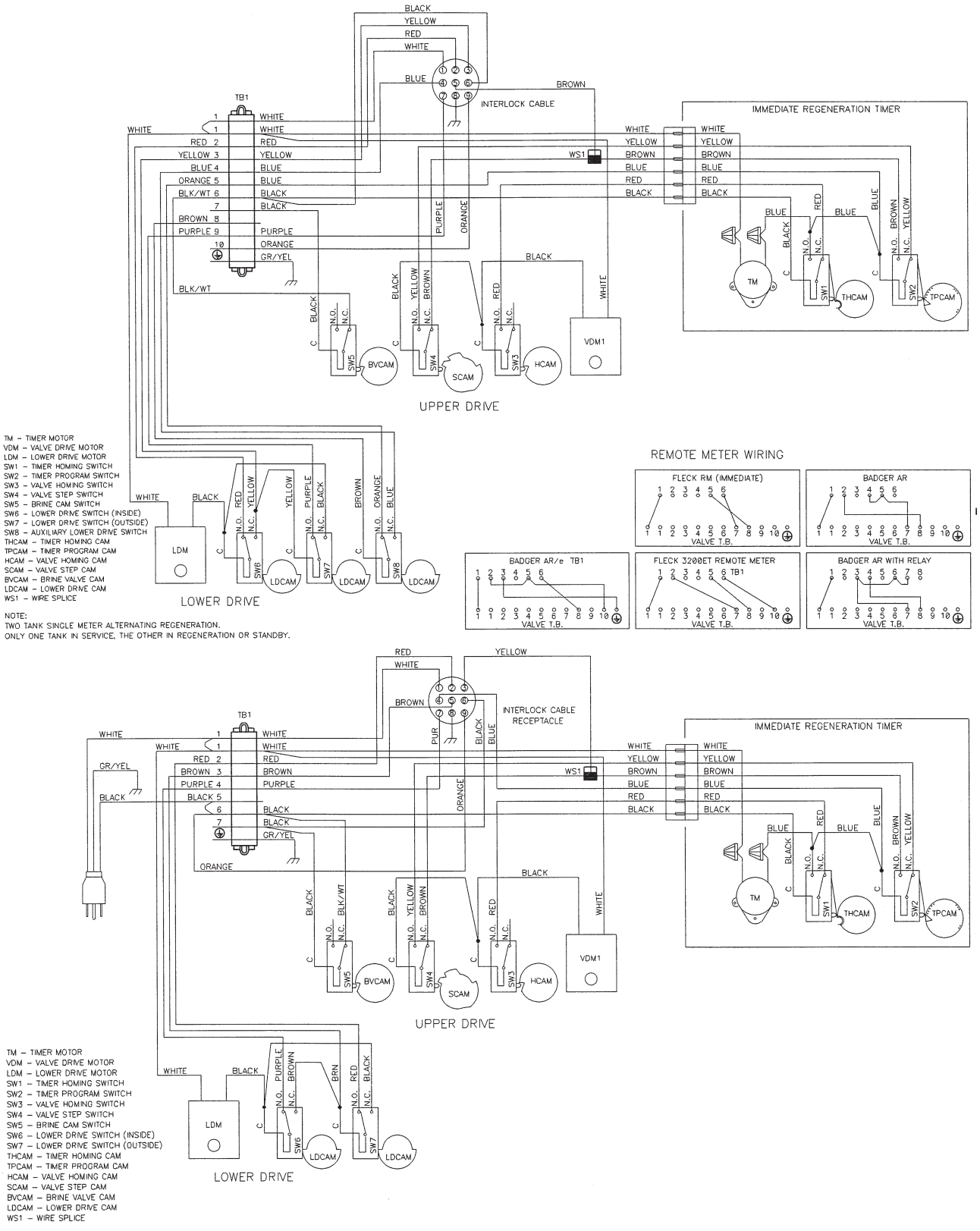
REMOTE METER WIRING



TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH (INSIDE)
SW7 – LOWER DRIVE SWITCH (OUTSIDE)
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM

VALVE WIRING *continued*

System #7



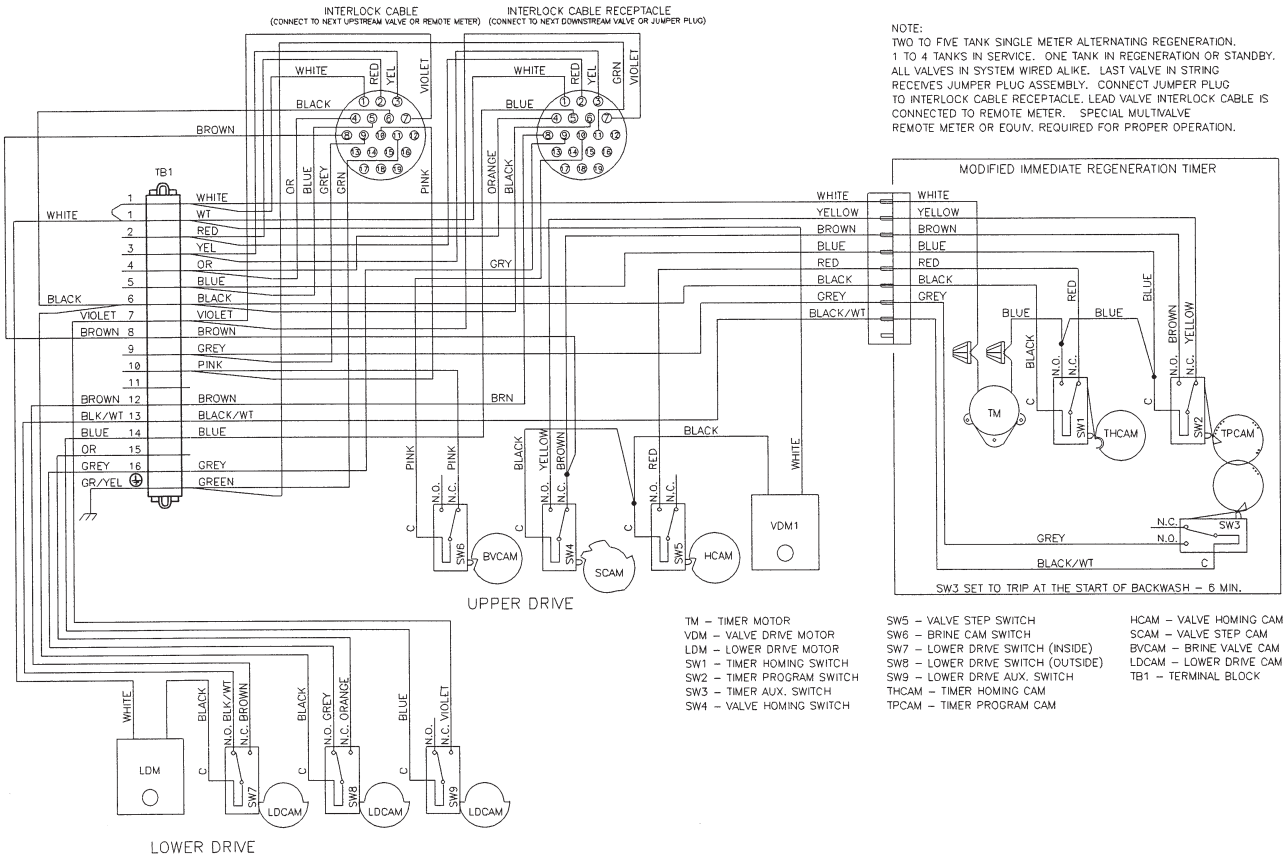
TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH (INSIDE)
SW7 – LOWER DRIVE SWITCH (OUTSIDE)
SW8 – AUXILIARY LOWER DRIVE SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM
WS1 – WIRE SPLICE

NOTE:
TWO TANK SINGLE METER ALTERNATING REGENERATION.
ONLY ONE TANK IN SERVICE, THE OTHER IN REGENERATION OR STANDBY.

TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – VALVE HOMING SWITCH
SW4 – VALVE STEP SWITCH
SW5 – BRINE CAM SWITCH
SW6 – LOWER DRIVE SWITCH (INSIDE)
SW7 – LOWER DRIVE SWITCH (OUTSIDE)
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM
WS1 – WIRE SPLICE

VALVE WIRING *continued*

System #7 Multivalve


INTERLOCK CABLE
(CONNECT TO NEXT UPSTREAM VALVE OR REMOTE METER)
INTERLOCK CABLE RECEPTACLE
(CONNECT TO NEXT DOWNSTREAM VALVE OR JUMPER PLUG)
NOTE:
TWO TO FIVE TANK SINGLE METER ALTERNATING REGENERATION.
1 TO 4 TANKS IN SERVICE. ONE TANK IN REGENERATION OR STANDBY.
ALL VALVES IN SYSTEM WIRED ALIKE. LAST VALVE IN STRING
RECEIVES JUMPER PLUG ASSEMBLY. CONNECT JUMPER PLUG
TO INTERLOCK CABLE RECEPTACLE. LEAD VALVE INTERLOCK CABLE IS
CONNECTED TO REMOTE METER. SPECIAL MULTIVALVE
REMOTE METER OR EQUIV. REQUIRED FOR PROPER OPERATION.
MODIFIED IMMEDIATE REGENERATION TIMER
TB1
UPPER DRIVE
LOWER DRIVE
LDM
VDM1
TM
THCAM
TPCAM
BVCAM
SCAM
HCAM
LDCAM
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW3 SET TO TRIP AT THE START OF BACKWASH – 6 MIN.
TM – TIMER MOTOR
VDM – VALVE DRIVE MOTOR
LDM – LOWER DRIVE MOTOR
SW1 – TIMER HOMING SWITCH
SW2 – TIMER PROGRAM SWITCH
SW3 – TIMER AUX. SWITCH
SW4 – VALVE HOMING SWITCH
SW5 – VALVE STEP SWITCH
SW6 – BRINE CAM SWITCH
SW7 – LOWER DRIVE SWITCH (INSIDE)
SW8 – LOWER DRIVE SWITCH (OUTSIDE)
SW9 – LOWER DRIVE AUX. SWITCH
THCAM – TIMER HOMING CAM
TPCAM – TIMER PROGRAM CAM
HCAM – VALVE HOMING CAM
SCAM – VALVE STEP CAM
BVCAM – BRINE VALVE CAM
LDCAM – LOWER DRIVE CAM
TB1 – TERMINAL BLOCK

SERVICE ASSEMBLIES

60036-02 1800 Brine Valve:
11772.....Spring
11774.....Retaining Ring
18713.....Brine Valve Body
16497-01 .....Brine Stem Assembly
16498-01 .....Stem Guide Assembly

60277-xx 1800 Injector Assembly:
12473.....Screw - Hex Head
15127-xx.....Injector Throat
15128-xx.....Injector Nozzle
15246.....O-ring -116
16340.....Injector Body
16341-01 .....Injector Cover
-xx Specify Size

60160-00 3900 Upper Piston Assembly:
14818.....Clip Piston Rod
14922.....O-ring -035
15125.....Piston Rod
16130.....Piston
16389-0 .....End Plug Assembly

60107-00 3900 Lower Piston - Hard Water Bypass:
14818.....Clip Piston Rod
16071.....Piston
16072.....Piston Rod
16076.....O-ring -042
16399-01 .....End Plug Assembly - White

60107-10 3900 Lower Piston - No Hard Water Bypass:
14818.....Clip Piston Rod
16082.....Piston - No Hard Water Bypass
16072.....Piston Rod
16076.....O-ring -042
16399-11.....End Plug Assembly - Black

60131 3900 Upper Seal Kit:
10368.....Spacer
10369.....Spacer - Port
11720.....Seal

60132 3900 Lower Seal Kit:
16068.....Seal
16069.....Spacer - Narrow
16070.....Spacer - Wide

60057-01 3900 Upper Drive Motor Assembly - 115 V:
10302.....Insulator - Switch
10872.....Screw - Hex Head
11080.....Screw - Flat Head
10218.....Switch
10300.....Screw - Hex Head
15120.....Bracket - Motor Mounting
40392.....Drive Motor - 115 V. 50/60 Hz
16052.....Blushing
17797.....Bracket - Switch Mounting
12624.....Screw - Pan Head

60058-01 3900 Lower Drive Motor Assembly - 115 V System #4:
10302.....Insulator - Switch
10872.....Screw - Hex Head
11080.....Screw - Flat Head
10218.....Switch
10300.....Screw - Hex Head
11805.....Screw - Pan Head
40392.....Drive Motor - 115V. 50/60 Hz
17797.....Bracket - Switch Mounting
16086.....Bracket - Motor Mounting

60131-10 3900 Upper Seal Kit:
10368.....Spacer
10369.....Spacer
11720-02.....Seal, 1-1/2", Silicone

60132-10 3900 Lower Seal Kit:
41534.....Seal, 3900, 558 Bypass
16069.....Spacer, 3900
16070.....Spacer, 3900

60038 Safety Brine Valve, 2350:
60028-30 .....Float Assembly, White
60009-00 .....#900 Air Check, Less Fittings
18602.....Kit, Fitting, 1700 Brine, 900 Air Check
18603.....Kit, Fitting, 1700 Brine, 2350 Safety

61417 Adapter Assy, Side Mount, 3900:
18584-02 .....Adapter, 3900 Side Mount
16257.....Segment, Flange
11238.....Screw, Hex, 5/16-18 x 1, 18-8 Stainless Steel
16345.....O-ring, 362
16800.....O-ring, 238
11533.....Plug, Pipe 1/4"

60150-3150 SVO, Assembly, 3150/3900

SERVICE ASSEMBLIES *continued*

Drain Line Flow Controls (DLFC):

60711-00.....2" NPT, Less BTTNS, w/2 Holes
60711-000.....2" NPT, Less BTTNS, w/3 Holes
60711-01.....2" NPT, Less BTTNS, w/1 Hole
60711-20.....2" NPT, 20 gpm
60711-25.....2" NPT, 25 gpm, Brass
60711-30.....2" NPT, 30 gpm
60711-35.....2" NPT, 35 gpm
60711-40.....2" NPT, 40 gpm
60711-45.....2" NPT, 45 gpm
60711-50.....2" NPT, 50 gpm
60711-55.....2" NPT, 55 gpm
60711-60.....2" NPT, 60 gpm
60711-65.....2" NPT, 65 gpm
60711-70.....2" NPT, 70 gpm
60711-75.....2" NPT, 75 gpm
60711-80.....2" NPT, 80 gpm
60711-85.....2" NPT, 85 gpm
60711-90.....2" NPT, 90 gpm
60711-95.....2" NPT, 95 gpm
60711-100.....2" NPT, 100 gpm
60812-30 .....2" BSP/ Metric, 30 gpm
60812-35 .....2" BSP/ Metric, 35 gpm
60812-45 .....2" BSP/ Metric, 45 gpm
60812-50 .....2" BSP/ Metric, 50 gpm
60812-55 .....2" BSP/ Metric, 55 gpm
60812-70 .....2" BSP/ Metric, 70 gpm
60812-75 .....2" BSP/ Metric, 75 gpm
60812-80 .....2" BSP/ Metric, 80 gpm
60812-90 .....2" BSP/ Metric, 90 gpm
60812-95 .....2" BSP/ Metric, 95 gpm
60812-100 .....2" BSP/ Metric, 100 gpm

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